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## A COMBINED FORM OF ILEITIS AND COLITIS

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The original description<sup>1</sup> in 1932 of a granulomatous, ulcerating and stenosing inflammation of the small intestine denominated regional or terminal ileitis, covered fourteen cases of a uniform disease, all of which had common clinical and pathologic characteristics and more or less similar topographic distributions. The almost constant involvement of the terminal ileum, the non-specific type of granulomatous lesion, the tendency to fistula formation, both internal and external, and the frequent tendency to stenosis of the lumen of the ileum led to the inference that a purely localized and constant clinical complex and pathologic entity sufficed to cover all the variations seen to that date.

After the appearance of the paper by Harris, Bell and Brunn,<sup>2</sup> in which an identical process was seen to involve the jejunum as well as the ileum we were fortunate in meeting cases of this type and enlarged the original concept of ileitis to include jejunitis<sup>3</sup> or, as it was called by Brown,<sup>4</sup> "regional enteritis."

Today, with an experience of ileitis covering sixty observed, diagnosed and operatively confirmed cases, it would seem necessary to recognize still another, though less common addition to the original concept, namely, a form of terminal ileitis that is accompanied by a simultaneous inflammatory and ulcerative colitis. Of the sixty cases of ileitis we note complicating or associated colitis in nine instances. The clinical picture, the pathologic lesion and the medical and surgical treatment of this combined disease are those neither of ileitis nor of colitis, the condition has identifying characteristics clinical symptoms and a course of its own not difficult to recognize once the differentiating markings and features have been clearly defined and described.

The priority of the description of this combined disease rests not with us but with Colp,<sup>5</sup> who in 1934 published a report of the first case in which operation was performed with full pathologic details. In the same year at the meeting of the American Gastro-Enterological Association Brown<sup>4</sup> described eighteen

cases of regional enteritis, in five of these eighteen cases "the terminal portion of the ileum, the cecum and part of the ascending colon were involved." When the description by Colp first appeared we were loath to accept the fact that ileitis of any type could involve the colon in an analogous inflammatory process. Our scientific hesitancy was based on the fact that in our first group of cases of regional or terminal ileitis the process was observed to involve almost uniformly the terminal eight to ten inches of ileum, ending abruptly at the ileocecal valve. In all our first resected specimens, the process of inflammation seemed utterly unable to jump the ileocecal barrier, just as an antral carcinoma meeting the pyloric ring, is unable to, or does not, invade the duodenum.

In addition, we had frequently observed attempts at palliative surgery in which diseased ileum was anastomosed or short-circuited to segments of the colon in the form of ileo transverse colostomy, ileo ascending colostomy or ileosigmoidostomy. In all these futile operations in which the diseased ileum was not resected the anastomotic operation failed to heal the disease but the continuance of symptoms was due to the residual ileitis and not to any transference of the pathologic process to the contiguous, now continuous, colon. For instance in one case the diseased ileum was inadvertently cut across, the terminal segment left in situ and the proximal inflamed portion anastomosed to the ascending colon. Sixteen years later a corrective second stage and radical resection was performed. We observed that, though a markedly diseased ileum had been anastomosed directly to a healthy ascending colon and had lain in that continuous relationship so that the contents of the pathologic ileum were continuously washed into the ascending colon no disease of the latter organ had transpired, the mucosa of the resected colon being intact and of normal texture. Based on several such similar almost identical experiences, with full ability to study at leisure the secondarily resected colon and ileum, we were quite resolved that ileitis could not spread to the colon under any conditions, natural or artificial.

In spite of this apparently convincing argument, with greater experience we are now able to discuss nine cases of combined ileitis and colitis. We regard the process as an involvement of both small and large intestines in a similar nonspecific inflammatory process, the ileum reacting to the noxus as a granuloma the large intestine as an ulcerative and hyperplastic colitis. The relationship is usually not sequential but synchronous. Occasionally however it would appear as if a primary ileitis had spread to and involved the colon in a secondary invasion.

Before proceeding to discuss this complex of combined ileitis and colitis, it is essential to record a fact that every one concedes, namely that in severe diffuse

From the Gastro-Intestinal Group of the Medical Services Mount Sinai Hospital

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1 Crohn B B Ginzburg Leon and Oppenheimer G D Regional Ileitis J A M A 99 1323 (Oct 15) 1932

2 Harris F I Bell G H and Brunn Harold Surg Gynec & Obst 37 637 (Nov) 1933

3 Crohn B B Am J Digest Dis & Nutrition 1 97 1934

4 Brown Percy Bergen J A and Weber H Tr Am Gastro-Enterol A 1934 p 2

5 Colp Ralph S Clin North America 14: 443 (April) 1934



ulcerative colitis, as well as in localized right-sided segmental colitis and cecitis, the ileum may be involved by retrograde extension of the pathologic process (fig 1). The publications of Lubarsch and Henke<sup>6</sup> and of Bargen, Buie and Rankin,<sup>7</sup> and the figures of Klemperer<sup>8</sup> in the Mount Sinai Hospital Laboratories and others all agree in placing an approximate 25 per cent incidence of involvement of the terminal ileum in ulcerative colitis of the more severe type. Radiographers making observations during a barium sulfate enema recognize at least a 10 per cent incidence of ileocecal incompetence and regurgitation. In these commonly fatal instances of colitis, wherein the process of destruction extends directly up to and involves the ileocecal valve, retrograde involvement by backwash into the ileum is easy to understand and at autopsy is susceptible of recognition. This process in the ileum in ulcerative colitis is destructive and denuding, as it is in the colon but is not hyperplastic and granulomatous, as in primary ileitis.

That ulcerative colitis is capable of involving the ileum was again seen in another striking instance. An

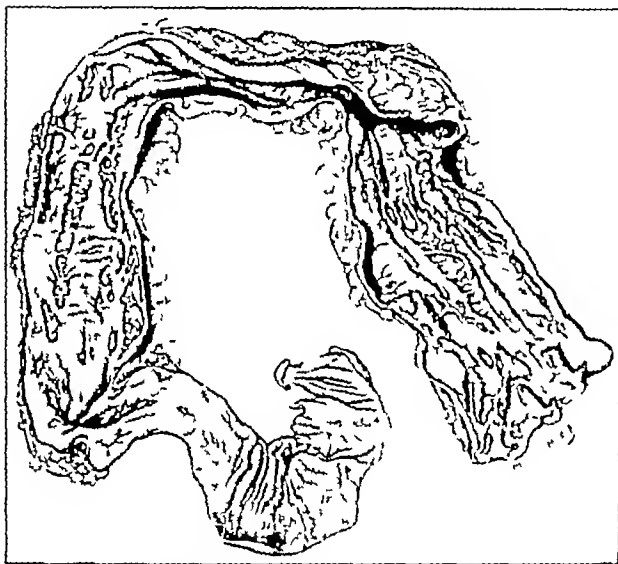


Fig 1—Autopsy specimen of severe ulcerative colitis with retrograde extension into the ileum.

ileosigmoidostomy had been performed in order to short-circuit a severe colitis involving mainly the proximal segments of the colon. The loop of ileum used for the anastomosis was healthy, the sigmoid slightly involved in the disseminated colitis. Within a few weeks death occurred with symptoms of peritonitis. At autopsy an ulcerative perforating inflammatory process of the segment of the ileum employed in the anastomosis was observed. Death was due to perforation of two large ileac ulcers at a site near to and contiguous to the stoma and to the diseased sigmoid colon.

In the severe segmental forms of ulcerative colitis the process may involve not the whole colon, nor the commonly implicated sigmoid and rectum, but only one sector, such as the cecum and the ascending colon. In these rare right-sided types of ulcerative colitis or of granulomatous ulcerative colitis extension into the

ileum is not uncommon. Resections of the cecum, ascending colon and terminal ileum are highly successful in this type of case and usually show some retrograde involvement of the ileum. But the stenosing, fistulous, granulomatous process so characteristic of primary ileitis is completely missing and the clinical picture is predominately that of colitis and not that of ileitis.

#### GENERAL DESCRIPTION OF THE COMBINED FORM

The nine cases of combined primary ileitis and colitis gave a characteristic pathologic, clinical and roentgenographic picture. An ulcerative granulomatous inflammation of a severe type involves the terminal ileum and scattered and interrupted segments of the colon or the contiguous cecum and ascending colon. The clinical picture is essentially that of the ileitis, which must be considered as the dominating factor and as contributing the main clinical features. The onset is usually stormy and febrile with high temperature, abdominal pain and a low grade diarrhea with from two to three movements a day. The course soon becomes chronic debilitating and emaciating. The entire pathologic process ileitis and colitis, may subside after many months with complete restoration to health, or resection of the ileum (and the contiguous ascending colon) may be followed by subsidence of the colitis and cure. Resection of the colon is not mandatory, removal of the diseased ileum, not in part but in whole, suffices to allow complete subsidence of all symptoms.

The involvement of the colon in the picture may be seen at the exploratory operation or may be recognized roentgenologically by barium sulfate enema, or it may be seen late in the picture during the course of routine sigmoidoscopy, when the process has extended to the distal colon.

The differentiation from primary ulcerative colitis is made on the basis of the lesser severity of the colonic involvement, the very mild degree of diarrhea in spite of high temperatures, and the presence of the predominating symptoms of the ileitis, namely, a mass in the right iliac region, abdominal cramps and eventually ileac stenosis. Fistula formation in this type of combined disease is apparently rare (see case 7).

The nature of the etiologic agent is not known. The usual careful routine laboratory studies and search for known specific agents has not yielded any information or suggestion of the causative agent of the disease. Sections, cultures and animal inoculations have all been negative for tuberculosis, in one case there was a high agglutination against dysentery organisms, the significance of which remains to be adjudged.

#### THE CLINICAL COURSE IN COMBINED ILEITIS AND COLITIS

The symptomatology and clinical features of this complicated malady are so variable that it will pay to discuss in brief the outstanding characteristics of these few cases. The surgical and medical treatment of each case is so interwoven with the study of the individual features that a discussion of treatment becomes an integral part of the analysis of each example.

#### A Two Cases in Which There were Acute Severe Onset and Spontaneous Recovery

CASE 1—J. L., a man aged 29 dated the onset six weeks prior with diarrhea and abdominal cramps, high continuous temperature and loss of 24 pounds (11 Kg). Physical examination showed nothing distinctive. Serum agglutinations were positive in a dilution of 1:180 against the Sonne and 1:160 against the Flexner strain of dysentery bacilli. Sigmoidoscopy

6 Henke and Lubarsch. *Handbuch der speziellen Pathologie Anatomie und Histologie*. Berlin 1928. IV. 3d section.  
7 Rankin, F. W., Bargen, J. A. and Buie, L. A. *Colon, Rectum and Anus*. Philadelphia W. B. Saunders Company 1932.  
8 Klemperer, Paul. Personal communication to the authors.

and a barium sulfate enema were negative. A barium sulfate meal showed a stricture of the terminal 8 inches of the ileum (ileitis). The course was febrile for six weeks and the patient became progressively emaciated.

Exploratory laparotomy revealed a typical soggy edematous terminal ileitis and a cecum, transverse colon and sigmoid that were thickened, injected and edematous and covered with a



Fig 2 (case 2)—Appearance after barium sulfate enema

shaggy peritoneal exudate. Resection of the lesion was rejected as too dangerous to the patient and too extensive in its requirements to be successful.

This exploratory procedure was followed by a stormy febrile course lasting for several months and ending in gradual resolution, fall of temperature, cessation of the diarrhea and eventually a gain of 50 pounds (22.7 Kg.).

Almost to the day of the completion of this paper, this case had been regarded as a striking example of a spontaneous remission of the combined disease. However, we have just learned that following an asymptomatic period of two years the patient suddenly developed an intestinal obstruction. A stenosing lesion of the terminal 16 inches of ileum was successfully resected. At operation there was absolutely no evidence of the previous acute and severe colitis. Until this sudden reversal, we had regarded spontaneous resolution of combined ileitis and colitis as a reasonable possibility. The key to the problem of the relation of ileitis to colitis apparently rests in this case. Again the ileitis is the dominant factor; the colitis may spontaneously resolve. Not so the ileitis, which lies dormant and asymptomatic perhaps for years, only suddenly to appear as a stenosing, cicatrizing end-stage of the process.

**CASE 2**—F. T., a woman aged 21, had had vague abdominal cramps worse after eating accompanied by a desire to defecate, for three years. Acute onset occurred in 1932 with right lower abdominal pain and temperature varying up to 103 F. Laparotomy for supposed acute appendicitis exposed injected, inflamed, congested segments of colon and a slight thickening of the terminal ileum. Only appendectomy was performed. Recurrence or persistence of the abdominal pain and mild diarrhea with normal temperature were noted in 1933. One year later the patient was admitted for study at which time she showed a mass in the right lower abdominal quadrant. Roentgeno-

graphic studies showed a typical ileitis and segmental disseminated colitis (figs 2 and 3).

A clinical study in 1934 and roentgenographic studies showed subsidence of symptoms and restitution of the intestinal tract to normal morphology and function.

These two cases are characterized by the severe onset, the febrile course and more or less severe abdominal cramps but mild diarrheal symptoms. The terminal ileum and disseminated (not continuous) segments of colon were identically involved in the inflammatory process.

The first of these cases with its dramatic sudden intestinal obstruction and successful resection of the ileum runs true to type as an instance of ileitis, the colitis being of lesser import. The second of these cases went into spontaneous recovery, which recovery holds good to this date. The period of observation is too short however, in this type of disease, to warrant too great an optimism.

**B. Two Cases with Successful Resection**—These two instances, in a man aged 27 and a youth of 19 years, were almost identical. The symptoms were abdominal pain and mild diarrhea, from two to six movements a day, a febrile course and a palpable mass in the lower right abdominal sector. Resection in both instances of ileum, cecum and ascending colon, with ileotransverse colostomy in one and ileosigmoidostomy in the other, resulted in uneventful recovery. In both instances a typical ileitis was associated with a definite localized ulcerating colitis involving the proximal segment of the colon directly continuous with the terminal ileum. The ileocecal valve appears in this type to offer absolutely no barrier.

In the latter of these patients the colitis had extended by groove or gutter-like longitudinal ulcerations beyond the hepatic flexure, being felt and seen also to involve the transverse colon. The resection of the ascending



Fig 3 (case 2)—Three hours after barium sulfate meal

colon was made through diseased tissue (fig 4). The recovery nevertheless was complete and immediate. The lesson in this case is most important and instructive. Remove the diseased ileum and the colitis will most often take care of itself. Obviously the ileum is the controlling seat of the disease process, the colitis being itself of lesser importance. Surgery directed to

the ileac lesion usually suffices to clear up the entire problem

*C Three Cases with Unsuccessful Primary Operations Requiring Secondary Corrective Procedures*

CASE 5—J L, a girl, aged 17 years, complained for one year of lower abdominal cramps and watery stools, occasionally accompanied by bright red blood a slight loss of weight and

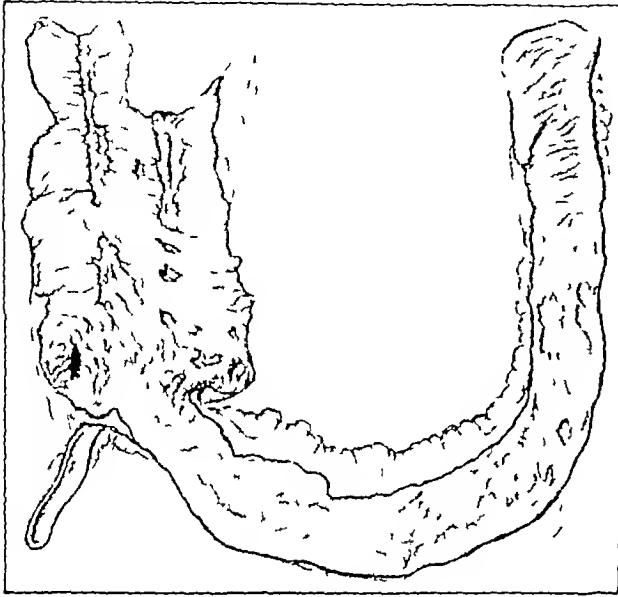


Fig. 4 (case 4)—Resected specimen showing uninterrupted lesion involving ileum and entire colon. Note resection through diseased area of colon.

night sweats were present. The barium sulfate meal showed a typical terminal ileitis. The barium sulfate enema showed irregularity of the cecum, ascending colon and proximal half of the transverse colon, suggestive of ulcerative colitis. Laparotomy confirmed the roentgenographic diagnosis of ileitis and colitis, and an ileosigmoidostomy was performed as a side tracking palliative venture.

One year later persistence of abdominal pain and diarrhea led to a reinvestigation. Roentgenography showed a segmental colitis. Sigmoidoscopy was repeatedly negative. At reoperation the terminal ileum was found atrophied and constricted but not actively inflamed. The disease process was limited to the segment of the sigmoid colon adjacent to the site of the ileosigmoidostomy. The loops of ileum above and below the anastomosis were entirely free from disease. The diseased portion of the sigmoid and the adjacent portions of the ileum were resected and new anastomoses made. The clinical course almost a year later is very favorable. The patient has gained weight and is free from abdominal pain and diarrhea.

CASE 6—S W, a man aged 30, had an appendectomy performed in 1929 for abdominal pain. At the time, the ileum and cecum appeared chronically inflamed. Six months later (1929) an ileotransverse colostomy was performed for "intestinal obstruction." In 1930, because of persistent pain and mild diarrhea, he was operated on at Mount Sinai Hospital; a resection of the ileum and ascending colon being performed. The pathologic specimen showed an ileocecal stenosis due to a diffuse polypoid ulcerative colitis and a terminal ileitis.

As in the preceding case (palliative ileosigmoidostomy), in this instance an attempt to short-circuit the lesion in the ileum and cecum by performing an ileotransverse colostomy similarly failed. In both instances a secondary corrective resection of the ileum resulted in cure.

CASE 7—B G, a man aged 25, presented a complicated picture in which the symptoms of colitis dominated. The course was severely febrile for a year, marked by diarrhea and abdomi-

nal cramps. While under treatment for the last two years the patient was much improved at times, but the symptoms always recurred. Roentgen examination showed a shaggy irregularity of the transverse colon. Repeated x-ray studies over a course of two years showed a gradual retrogression of the inflammatory lesion to the hepatic flexure, and then to the cecum and ileum, as well as extension to the splenic flexure.

A mass resection of the ileum and entire proximal colon was performed. The resected specimen showed a polypoid, diffuse, ulcerative colitis, with an ulcerative involvement of the terminal ileum. Diarrhea has subsided to date (four months after operation) and the patient is afebrile, but a persistent fecal fistula at the site of the ileosigmoidostomy betokens a persistent inflammatory focus, probably in the ileum at the site of the stoma. The fistula, however, has completely healed and the patient is now well.

This case is an instance of colitis, complicated by an extension into the ileum. It is the latter feature, by adding to the gravity of the case, that has retarded an otherwise brilliant surgical procedure. This case is different from the others, in that the colitis was hyperplastic and polypoid, being similar to the picture of primary or idiopathic and nonspecific ulcerative colitis of long standing. The ileitis apparently here plays a secondary but not an inconsiderable role.

*D A Case of Simultaneous Ileitis and Colitis with an Unsuccessful Resection*

CASE 8—M S, a white youth aged 16 years, had the onset of symptoms one year prior to admission (1933) with loss of weight, nausea and vomiting and mild abdominal cramps associated with occasional frequent watery stools. The first attack lasted a few days and there were occasional recurrences throughout the year. Three days prior to admission he developed an erythematous maculopapular rash, had a temperature between 101 and 103 F and continued to complain of cramps and mild diarrhea. Sigmoidoscopy was negative. The barium



Fig. 5—Recurrent ileitis and subsequent colitis following partial resection of original ileitis.

sulfate enema showed a narrowing and irritability characteristic of ulcerative colitis involving the transverse colon and the proximal portion of the descending colon. During this period a palpable mass developed in the right lower quadrant. Throughout the following year, though improved, he had occasional febrile attacks with exacerbations of the skin lesion and occasional cramplike abdominal pain. In 1934 he was readmitted

because of these symptoms, and at this time examination with a barium sulfate meal showed a narrowing of the terminal ileum due to a stenosing lesion of this segment and representing the mass that had been felt in the abdomen

Operative intervention was deemed advisable. The terminal ileum was found very much thickened and surrounded by adhesions. The cecum and ascending colon were also involved and there was a small ileocolic fistula. The terminal ileum and the colon, as far as the proximal transverse segment were resected and an ileotransverse colostomy was performed. Pathologically there was an ulcerating and cicatricial cecitis and ascending colitis as well as a stenosing and ulcerating lesion of the terminal ileum.

Four months after this operation the boy has again been admitted because of recurring bloody diarrhea. Sigmoidoscopy and a barium sulfate enema now show a diffuse ulcerative colitis of moderate severity involving the remainder of the colon.

The onset of this disturbance resembles that of a typical ulcerative colitis, although the predominance of cramps over diarrhea at the onset and the early development of a tender mass in the right lower quadrant, indicate clearly that the ileitis developed simultaneously with the onset of the colitis.

#### *E A Case of Ileitis with Secondary, not Simultaneous, Development of Colitis*

CASE 9—S. A. a woman, aged 24, developed a fecal fistula five years ago following a futile appendectomy. The fistula led down and opened into the vaginal fornix. The patient was operated on twice again for this persistent fecal fistula (1929) with at the third laparotomy, a resection of an 8 inch segment of diseased terminal ileum. Two inches of diseased terminal ileum was unfortunately left in situ and an ileocecostomy was performed.

The patient was well for ten months and then developed bloody diarrhea with cramps and slight loss of weight. A recent roentgenographic review of the case after an absence of four years, during which she suffered intermittently with pain and diarrhea, shows a diffuse narrowing of the terminal ileum proximal to the anastomosis with the cecum, and a diffuse advanced ulcerative colitis involving the transverse and descending colon. Sigmoidoscopy confirmed the latter observations. On her original admission the patient had no symptoms of ulcerative colitis, and a barium sulfate enema at that time failed to demonstrate any lesion of the colon. Nor did the surgeon who performed the ileocecostomy observe any evidence of colitis.

This case is illustrative of the manner in which a residual ileitis, after an incomplete resection of the ileum, can spread to and involve the remainder of the hitherto normal colon. The cause of the extension of the disease is easy to understand. The failure to remove the entire terminal ileum, allowing the terminal 2 inches of diseased tissue to remain in situ as a constant focus for renewed inflammation, explains the lack of success of this operative procedure.

#### COMMENT

These nine cases represent a combined clinical picture, one that is difficult to grasp except for those familiar with the protein manifestations of this involved disease. In all these young persons abdominal pain and a mild diarrhea are the outstanding characteristics. Either the course is acute and fulminating eventually assuming a chronic phase, or a slowly progressive, protracted, downward course features the malady.

In all the cases the ileum was typically involved. In all instances the colon is also affected by a similar, but not identical, pathologic process. In some the colitis is apparently contiguous or continuous with the ileitis, in some the involvement of the colon is patchy or segmental, the areas of involvement being not continuous

but separated by spaces of normal mucosa. The diagnosis rests on careful and accurate roentgenographic studies, both by barium sulfate meal and the barium sulfate enema. The right side of the colon, up to and at times involving the transverse colon, is usually involved, the distal colon being free of disease, as evidenced by the negative barium sulfate enema and sigmoidoscopy. In the unsuccessful cases, the descending and distal large intestine may be secondarily involved by extension of the right-sided process.

Occasionally spontaneous recovery of both lesions is possible. The ileitis is the dominating feature of the disease, removal of the ileitis usually resulting in cure, as in cases 3 and 4. Side-tracking operations without removal of the ileitis is ineffectual, as in cases 5, 6 and 7. Occasionally, even with resection of the ileum and the involved proximal colon the disease recurs in the residual distal colon, as in case 8.

The whole clinical picture is apparently that of a primary ileitis, the associated colitis is discovered only by roentgenographic studies or is suggested by a subsequent exacerbation of diarrheal symptoms. The brilliant surgical results seen after resection of primary regional ileitis may not always be duplicated in this more complicated collateral involvement of ileum and colon. The implication of the colon in the pathologic process throws the sinister shadow of "colitis" over an otherwise simple clinical and pathologic picture, one that ordinarily yields rapidly to the measures of a skillful surgeon. Here, as everywhere else, colitis is the stumbling block of both physician and surgeon. The union of colitis, essentially a disease requiring medical therapeutics, with ileitis, a surgical problem, constitutes a paradoxical combination.

With greater experience and watchful direction, early recognition and early resection may, except in the acute cases, give the solution to an otherwise complicated and difficult clinical problem.

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#### ABSTRACT OF DISCUSSION

DR. A. A. BERG New York. Several years ago Dr. Crohn described under the caption "regional or terminal ileitis" a disease of the terminal portion of the ileum. This disease has a typical lesion, is always confined to the terminal segment of the ileum never advances beyond the ileocecal valve and cannot be ascribed to the action of any known organism. Hence its name, "nonspecific regional ileitis." In no case of typical regional ileitis did the lesion extend beyond the ileocecal valve. In no case in which a sidetracking by ileocolostomy was done for the cure of the ileitis did the disease extend from the small intestine into the colon at the site of the anastomosis, even though there was no ileocecal valve to hinder the spread of the disease. In no case in which the colon has been involved coincidentally with the ileum has the colonic lesion borne any resemblance to the lesion in the terminal ileum. And in cases in which the colon has been involved coincidentally with the ileum the lesion in the terminal ileum has been distinctive and characteristic of the lesion that the authors have described as regional ileitis. It has been known for a long time that coincident lesions of the small intestine and colon are of comparatively common occurrence described under the caption of enterocolitis. In these combined forms the disease may start in the small intestine or in the colon, or vice versa. This combined enterocolitis has none of the characteristics of "terminal ileitis." Some typical forms of regional ileitis are combined with an irritative lesion of the colon just as an irritative lesion of the pharynx and esophagus is frequently found secondary to a nasal sinusitis. In such cases the colon is congested and somewhat thickened. It is never ulcerated in the fashion of a true ulcerative colitis. This irritation is

produced by the discharges from the diseased portion of the small intestine. Such irritative lesions of the colon readily clear up on removal of the cause of the irritation, the terminal ileum. Regional ileitis is readily curable by resection of the terminal diseased ileum. Enterocolitis, if surgical demands a radical excision of all the affected parts of the small intestine and colon.

DR. JOSEPH FELSEN, New York. I shall have to disagree with the authors and with Dr. Berg with regard to the pathogenesis of the condition they describe. Chronic nonspecific ulcerative colitis and distal (regional) ileitis, either alone or as associated lesions, and nonspecific ileocecal granuloma are all manifestations of bacillary dysentery. It has been my privilege to describe thirty-eight consecutive cases of chronic ulcerative colitis, eleven of chronic distal ileitis, eleven of acute distal ileitis and two of nonspecific granuloma traceable to bacillary dysentery. One of these cases which I was permitted to study was shown on the screen by Drs. Crohn and Rosenak. The longer I work on this problem the more I am convinced that in the eastern part of the United States at least the entire pathology is explainable on the basis of bacillary dysentery. In the early stage there is a focal diffuse lymphoid hyperplasia of the follicles of the ileum and colon as well as a mesenteric and epicolic lymphadenitis. Sometimes there is an associated acute segmental distal ileitis, the condition generally being mistaken for acute suppurative appendicitis. Later hyperplasia of the lymph nodules is superseded by necrosis with ulceration of the overlying mucosa. In the average case the condition clears up in from seven to ten days. Any period beyond three weeks is highly suggestive of secondary nonspecific infection. In the latter the ulcerations persist and extend and usually within a year intramural infection is well established with mural fibrosis, pseudopolypoid, loss of haustration and possibly stenosis. I have seen this develop in the follow-up period in proved cases of acute bacillary dysentery. Nonspecific granuloma is part of the same pathologic process in which a productive type of inflammation occurs. As in chronic distal ileitis giant cells are present and for this reason the condition may be confused with tuberculosis. The surgical treatment of chronic ulcerative colitis or ileitis is very unsatisfactory in my experience except as an emergency procedure. Proper follow-up studies reveal a high incidence of recurrence, owing chiefly to the fact that the surgeon cuts through infected intestinal wall or overlooks other areas of segmental involvement. Intramural infection extends well beyond the grossly visible area of pathologic change. I think that the ideal therapy is the prevention of bacillary dysentery.

DR. ANTHONY BASSLER, New York. Ever since the U. S. Army records of the dysenteries of the Civil War were published these colon and ileac pathologic conditions have been known but nobody paid any attention to them until Dr. Crohn came along. The etiology of the subject is practically a blank today. No ordinary laboratory excepting one that is specially equipped for work on intestinal bacteria, no ordinary bacteriologist excepting one skilled in intestinal bacteria and no group unless it has a vast array of intestinal organisms to work with can be set right in the elucidation of intestinal granulomatous processes. I should like to do some work on a few of these proved cases in subcultural stool studies and agglutination ways. To me, these pathologic conditions are reactionary from toxic intestinal contents. There may be other factors such as allergic neurologic dietetic and endocrine combined with them. The studies of the colon and ileum of supposed nonpathologic kinds show such a vast array of minute pathologic changes in denudation of capillary cells, changes in the somatic infiltrative and wandering cells, fibrous tissue deposits, blood vessels, lymph clefts, nerve cells and neurons, lyses of cells and so on that the whole subject of colitis will see the elimination of entity terms such as "atony," "spasm," "irritable" and "unstable." Any of these causes if of long enough standing will prove to be a pathologic change that is reactionary but unlike many other essential organ tissues considerably reconstructible on the removal of the cause, often to degrees of apparent normality. The ileum and colon have a great ability to come back; no tissue in the body compares with the intestine in this. Then too one sees the opposite of life going on with extensive pathologic changes in the intestine, the same degrees of destructive pathologic conditions in other organs causing death. I think that all granulomatous processes in the intestine will have to be considered bacterial in cause and due to bacteria inimical to that individual until proved otherwise, and these will be found in the highly facultative gram negatives in association with certain anaerobes. The etiology of this subject requires extensive and intensive study, but it should be undertaken.

DR. J. SHELTON HORSLEY, Richmond, Va. About ten years ago I reported (*Unperforated Ulcers of the Terminal Ileum, Symptomatically Simulating Appendicitis*, *THE JOURNAL*, Sept. 19, 1925, p. 863) three cases of unperforated nonspecific ulcer of the terminal ileum clinically simulating appendicitis. In none was there extensive involvement of the ileum. Nov. 24, 1928, I operated on a patient with a diagnosis of acute appendicitis and found an inflamed infiltrated terminal ileum and the appendix not involved. I resected the affected ileum and cecum, made an end-to-end union and the patient recovered. There was no specific organism or structure in the specimen; it showed only acute and chronic inflammation. I really did not know what the nature of the pathologic lesion was until some time later when I read Dr. Crohn's paper. It was obviously a local ileitis. The patient made a satisfactory though slow recovery and had a fistulous opening and a sinus for some time. For several years after this he did very well but for the last few months he has been losing strength and having symptoms of obstruction. I operated on him recently and found the ileum greatly dilated with almost complete obstruction at the site of the anastomosis. The ileum showed at its junction with the colon a thick flange, which was edematous and ulcerated. For a distance of about 8 cm. in the ileum there were irregular superficial areas of ulcerations on the villi and for a distance of 6 cm. in the colon there was great thickening and ulceration and the lumen was much contracted. The resection was done with end-to-end union and the patient made a satisfactory recovery. If any surgical procedure is to be attempted in these cases of local ileitis it should be thorough and the complete resection should be done preferably in one stage. This can usually be accomplished by giving intravenously a continuous injection of 5 per cent dextrose in Ringer's solution. If this is done through a cannula and the patient is matched up for a transfusion immediately afterward, frequently a resection can be completed in a feeble patient with comparatively little shock. A transfusion of blood is very helpful. In continuous intravenous injections the cannula tube and narrow buret should be properly assembled and applied and there should be no intervening "drip" apparatus, which is actually dangerous in giving intravenous solutions and has no advantage. I have called attention to this elsewhere (*Arch. Surg.* 30:908 [May] 1935). The blood pressure should be taken at frequent intervals and if the blood pressure tends to go above normal the injection should be discontinued or cut down to a minimum. The advantage of this method over proctoclysis in intestinal surgery is that it gives the intestinal tract physiologic rest, so that healing does not have to be disturbed by the distention of the intestine or by the physiologic function of absorption.

DR. HYMAN I. GOLDSTEIN, Camden, N. J. Have the authors observed the occurrence of regional ileitis in young patients of the hypo-endocrine type or the hypopituitary or hypogonadal types? Perhaps the occurrence of this form of ileitis is determined by the endocrinologic or constitutional factors in some of these patients. I have recently seen two such cases.

DR. BURRILL B. CROHN, New York. Briefly Dr. Berg prefers to use the old time name of enterocolitis to describe the involvement of both ileum and colon in this type of case. Apparently he takes the view that these cases are predominantly colitis with involvement of the ileum. The pathologic changes in primary ileitis are different from those of secondary ileac involvement. Primary ileitis is a granulomatous process, thick, hard, eventually with cicatrizing involvement of the ileum as opposed to the flat thin superficial ulceration of colitis with ileac involvement; the latter never goes on to granuloma or to cicatrization or stenosis. Drs. Felsen and Bassler are definitely suggesting that ileitis is bacterial dysentery in etiology. We have never had a positive culture for bacillary dysentery.

in ileitis. We have had many positive dysentery cultures in colitis at Mount Sinai. We have never but once had a positive agglutination against dysentery organisms in ileitis though for some time my opinion has been leaning strongly toward the possible bacillary dysentery origin of ulcerative colitis. In colitis there is a fairly high percentage of positive stool observations at Mount Sinai and many positive agglutinations. I am recognizing cases that originated in the New York and New Jersey endemic last summer which today have all the earmarks of so-called nonspecific ulcerative colitis. I am willing to endorse Dr Felsen's views regarding colitis and dysentery though with more moderation and with more reservations but I am as yet unable to agree with him that regional enteritis or regional ileitis is dysenteric in origin. There is nothing in the life history of bacillary dysentery to suggest regional ileitis. I am, however, not unwilling to deny absolutely the possible bacillary dysentery etiology of ileitis as well as of colitis. Whenever a sufficient resection for ileitis and colitis has been done, the patients have recovered. When insufficient resections are done secondary resections must be performed at a later date. With Dr Horsley I say that if one is going to operate in such a case, one should be sure to clear the disease. There are skip areas of ileitis in ileitis and areas of healthy tissue between islands of diseased tissue. If any of the disease is left in that segment of the ileum it will remain diseased and affect other sections of the ileum and possibly the colon. The mortality of operation should not be high. In our cases it is exceedingly low. With an intravenous drip resection of the terminal ileum and ascending colon is regularly done by Dr Berg with perfect ease and with very little shock, and the patients usually make an uneventful recovery.

### BACTERIUM NECROPHORUM IN CHRONIC ULCERATIVE COLITIS

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AND  
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In a previous study an attempt was made to determine the predominant types of bacteria in the colon in three patients with chronic ulcerative colitis. The symptomatology, x-ray and proctoscopic observations were in each case characteristic of the severe form of the disease. These patients had all been treated in the medical service for varying periods of time and were finally referred for surgical treatment because of progressive cachexia, anemia and persistence of local symptoms. In each case an end ileostomy was done. The bacteria in the isolated colon were then studied repeatedly at short intervals for several months. With the diversion of the fecal current, aerobic organisms began to diminish steadily in number and after a varying period of time the flora became almost entirely composed of nonsporulating anaerobes.<sup>1</sup> In the present study attempts were made to cultivate these organisms from the colon of seventeen additional cases and from six normal individuals. Complement fixation tests with certain of the strains were made against a large series of cases of typical ulcerative colitis as well as normal controls. Several attempts were made to reproduce the disease in the isolated colons of *Macacus rhesus* with cultures or colon discharges obtained from patients.

As the present study progressed we became convinced that the organisms in the isolated colons of patients

with chronic ulcerative colitis were predominantly of one type during the active stages of the disease. They grew on the surface of 10 per cent sheep blood veal infusion agar plates kept under strict anaerobic conditions and appeared as grayish raised colonies from 0.5 to 1 mm in diameter. The blood agar about the colonies was unchanged in the anaerobic condition but took on a greenish color when the plates were exposed to the air (fig 1). A foul odor, somewhat like that of butyric acid, was produced in these cultures. All the strains consisted of gram-negative pleomorphic rods. A few filamentous forms were observed, which bulged

TABLE 1—Recovery of *Bacterium Necrophorum* From Patients with Ulcerative Colitis

| Patient              | No of Times Cultured | <i>Bacterium Necrophorum</i> Demonstrated* | Growth on Subculture | Comment   |
|----------------------|----------------------|--|----------------------|---|
| 1                    | 5                    | +  | 0                    | Proctoscope from isolated colon   |
| 2                    | 0                    | +  | +                    | Specimens taken from isolated colon with sterile urethral catheter                |
| 3                    | 1                    | 0  | 0                    | Fecal specimen taken with sterile urethral catheter                               |
| 4                    | 1                    | 0  | 0                    | Specimen taken from isolated colon with sterile urethral catheter                 |
| 5                    | 3                    | +  | +                    | Proctoscope   |
| 6                    | 1                    | +  | 0                    | Amebic infection of colon proctoscopic specimen                                   |
| 7                    | 1                    | +  | 0                    | Proctoscope   |
| 8                    | 1                    | 0  | 0                    | Tuberculous ulceration of bowel proctoscopic                                      |
| 9                    | 1                    | +  | +                    | Proctoscope   |
| 10                   | 1                    | +  | +                    | Proctoscope   |
| 11                   | 1                    | 0  | 0                    | Proctoscope   |
| 12                   | 1                    | 0  | 0                    | Proctoscope   |
| 13                   | 1                    | +  | +                    | Proctoscope   |
| 14                   | 1                    | +  | +                    | Proctoscope   |
| 15                   | 1                    | 0  | 0                    | Proctoscope   |
| 16                   | 1                    | 0  | 0                    | Proctoscope   |
| 17                   | 1                    | +  | 0                    | Proctoscope   |
| 18                   | 3                    | +  | 0                    | Specimen taken from isolated colon  |
| 18                   | 3                    | +  | 0                    | Specimen taken from isolated colon with urethral catheter                         |
| 19                   | 1                    | +  | +                    | Patient with bacillary dysentery (Flexner type) swab inserted in ulcerated rectum |
| 20                   | 1                    | +  | +                    | Specimen taken from isolated colon with urethral catheter                         |
| 21 22 23<br>24 25 26 | 1                    | 0  | 0                    | Specimens taken from normal colons at proctoscopic examination                    |

\* In this column are included green colonies on the initial anaerobic blood agar plates streaked with the specimens. These colonies of cells were made up of cells typical of the type described and photographed.

in places and stained irregularly. True branching was never seen (figs 2, 3, 4 and 5). Many faintly staining (Gram stain) cells occur (ghost forms), which probably represent dead and disintegrating bacteria, since they were not observed in young cultures. The organisms were very sensitive to oxygen and several of the strains were lost on two occasions when the lid of an anaerobic jar cracked during incubation, allowing oxygen to have access to the cultures. When single colonies were picked to blood agar slants which were incubated anaerobically, growth usually did not occur. However, after a strain was started from a single colony it could readily be maintained by transferring a large amount of growth to blood agar slants and incubating anaerobically. These strains grew rapidly in Rosenow's<sup>2</sup> dextrose brain medium and produced abundant gas in twenty-four hours. There were few filaments in this medium and the cells stained as bipolar rods (fig 6). The addition of 0.05 per cent of cystine to mediums favored the growth of the organisms as did also 20 per cent sheep serum. In cystine veal infusion agar these strains produced a slight amount

2 Failure to obtain growth in a previous experiment<sup>1</sup> was probably due to insufficient inoculum.

From the Departments of Hygiene and Bacteriology, Surgery and Medicine of the University of Chicago.  
1 Dack, G. M., Heinz, T. E., and Dragstedt, L. R. Ulcerative Colitis. Arch. Surg. 51: 225 (Aug.) 1915.



of gas and had a tendency to decolorize somewhat brom cresol purple indicator. Much gas with acid was produced when 1 per cent dextrose or levulose was added to the medium. Lactose, mannitol, sorbite,



Fig. 1—Four-day anaerobic blood plate. Streaked from colon specimen from patient 2 Feb. 1 1934. Two of the colonies have been removed.

arabinose, salicin, trehalose, rhamnose, xylose, sucrose and glycerin were not fermented. Indole was produced in tryptophan dextrose cystine medium. Coagulated egg cube in cystine dextrose broth was not digested. Litmus milk was unchanged, although we are not certain that growth had occurred in it. Some strains liquefied gelatin but others did not. When injected subcutaneously into rabbits, these strains produced local abscesses, which either broke down and drained or

long wooden applicators. When the swab was removed, blood agar and eosin methylene blue plates were immediately inoculated and taken to the laboratory, where they were streaked with a wire loop to insure isolated colonies. The eosin methylene blue plates were incubated aerobically for sixty-four hours, after which they were examined for the possible presence of dysentery organisms. The blood agar plates were put in anaerobic jars<sup>1</sup> and incubated under strict anaerobic conditions for four days, after which time the jars were opened and the various colonies examined. Stains were made from suspicious looking colonies and when organisms resembling those described were found, subcultures of several colonies were made to blood agar slants. These slants were in turn incubated anaerobically in an attempt to subculture and study further the suspected organism. More often than not subcultures from these single colonies failed to grow. In one patient with an ileostomy the colon at intervals appeared normal at proctoscopic examination, except for a few widely scattered pinpoint ulcers. At such times *Proteus* organisms were abundant and produced a spreading growth all over the plates, thus making it impossible to find the characteristic anaerobes. Similar *Proteus* organisms have commonly been found in the isolated normal colons of monkeys. Best cultural results were obtained by taking specimens at proctoscopic examination directly from the lesions in a field free of fecal material.

#### COMPLEMENT FIXATION TEST

A strain isolated from patient 10 was grown in a liter flask of cystine dextrose broth in an anaerobic jar. As soon as a heavy growth occurred (twenty-four hours) the flask was removed. The growth from about 500 cc of this culture was centrifuged and the cells

TABLE 2—Complement Fixation Tests

| Num<br>ber<br>of<br>Pa<br>tients | History of<br>Bowel Disease                            | Positive Reactions |    |    |    | Serum Dilution |    |    |    | Negative<br>Reactions<br>Serum<br>Dilution |
|----------------------------------|--|--------------------|----|----|----|----------------|----|----|----|--|
|                                  |  | 1 5                |    |    |    | 1 10           |    |    |    |  |
|                                  |  | 1+                 | 2+ | 3+ | 4+ | 1+             | 2+ | 3+ | 4+ |  |
| 16                               | Ulcerative colitis*                                    | 1                  | 3  | 1  | 8  | 4              | 3  | 2  | 5  | 2  |
| 1                                | Recent hemorrhoid<br>ectomy                            |                    |    |    |    |                |    |    |    | 1  |
| 2                                | Regional ileitis                                       |                    |    | 1  | 1  |                | 1  | 1  |    |  |
| 1                                | Oarcinoma of rec<br>tum                                |                    |    |    | 1  | 1              |    |    |    |  |
| 2                                | Recent history of<br>dysentery (cause<br>undetermined) |                    | 1  |    |    |                | 1  |    |    | 1  |
| 16                               | None (control)   |                    | 1  | 2  |    | 1              | 2  |    |    | 13   |

\* One not tested in 1:5 dilution

4+ complete binding of complement no hemolysis

healed spontaneously. As far as could be observed, no systemic effect was produced.

Cultures were taken from the colons of twenty-six patients, twenty of whom had ulcerative colitis. Three of the twenty patients had ulcerated colons due to specific causes, one had an amebic infection, one a bacillary dysentery and one a tuberculous ulceration of the bowel. Fecal specimens were always examined for amebas. Cultures were taken in the manner indicated in table 1. When proctoscopic cultures were taken the proctoscope was first sterilized and lubricated with sterile petrolatum before insertion. The cultures were taken directly from the lesions with sterile swabs on



Fig. 2—Smear Gram stain. Green colony from patient 1. Four-day anaerobic blood agar plate. From a photomicrograph with a magnification of 2,700 diameters. June 1 1935.

were removed. The supernatant fluid was discarded. The cells were suspended in sterile saline solution and placed in 15 cc pyrex centrifuge tubes. The cell suspension was alternately frozen and thawed by plunging the tubes into alcohol containing small cakes of carbon dioxide snow and after freezing thawing in

hot water at about 50 C. This procedure was repeated twenty times, after which the tubes were centrifugated at high speed for one hour. The supernatant fluid was used as antigen and the sediment was discarded. When the stock antigen was not in use it was kept frozen in an electric icebox. The antigen was used in the tests in a 1:8 dilution. The Kolmer method was followed and the results are listed in table 2.

#### COMMENT

The results of the present investigation as well as those of our previous report<sup>1</sup> suggest that *Bacterium necrophorum* plays an important role in chronic ulcerative colitis in man. The conditions under which the organism was first isolated lend support to this view. The cultivation of bacteria from rectal discharges or from swabs applied to the rectal mucosa of patients with this disease can have little significance, since such organisms may have come down from the upper intes-

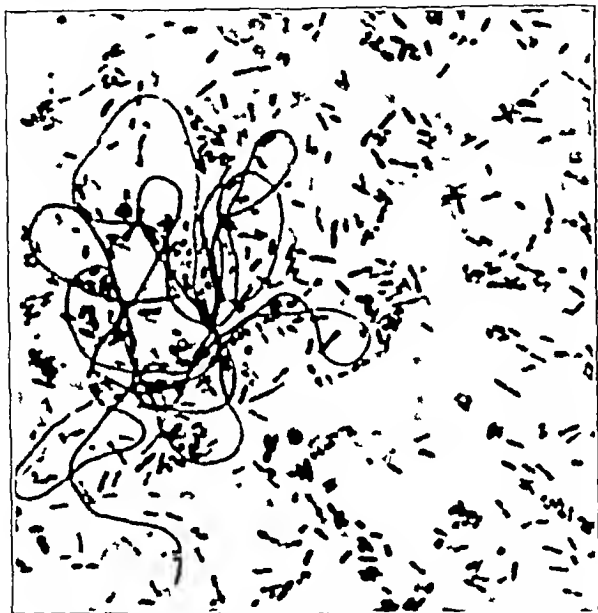


Fig 3—Smear Gram stain. Green colony from patient 5. Four-day anaerobic blood agar plate. From a photomicrograph with a magnification of 2,500 diameters. Feb. 2, 1935.

tine with the food. It has been clearly demonstrated in animal experiments that when a short segment of intestine is isolated from continuity with the alimentary tract its bacterial content becomes rapidly reduced and in many cases it becomes eventually sterile. It was not surprising to us therefore that when the colon was isolated in our three patients with ulcerative colitis by means of an end ileostomy with closure of the cecum to find a fairly rapid disappearance of the types of bacteria ordinarily encountered in the feces of normal individuals. The fact that anaerobic nonsporulating bacteria soon predominate in such isolated diseased colons is of considerably greater significance, therefore than had such been the case before the ileostomy was done. Furthermore the fact that such organisms were not found in the isolated colons of normal animals suggests that they have a special relation to the disease. The predominant organism resembles very closely the bovine *Bacillus necrophorus* studied by Orcutt,<sup>2</sup> in its cultural and morphologic characteristics. It is difficult

to isolate and to maintain in subculture. The distribution in nature is unknown. Our strains are practically identical with the "*Actinomyces pseudonecrophorus*" isolated by Harris and Brown<sup>4</sup> from the uteri of

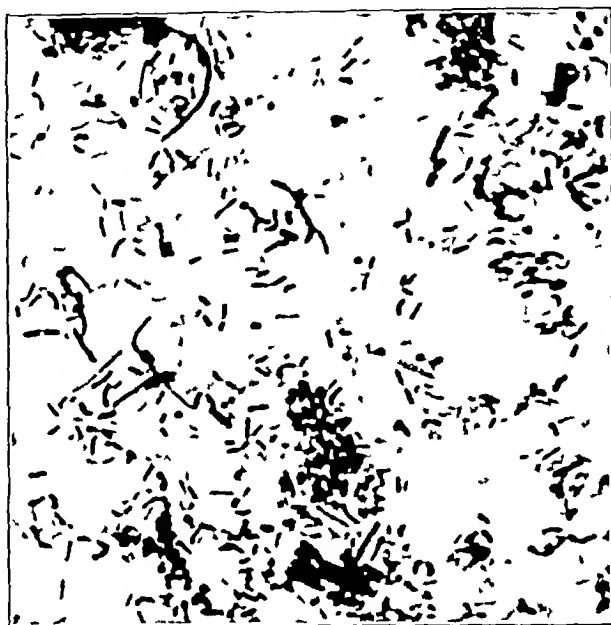


Fig 4—Smear Gram stain. Green colony from patient 6. Four-day anaerobic blood agar plate. From a photomicrograph with a magnification of 2,500 diameters.

women with puerperal infection. When injected subcutaneously into rabbits our organism does not produce the spreading necrosis that was characteristic of nine



Fig 5—Smear Gram stain. Green colony from patient 14. Four-day anaerobic blood agar plate. From a photomicrograph with a magnification of 2,400 diameters.

out of ten of Orcutt's strains. The tenth strain produced only an abscess at the point of inoculation, which healed after a number of weeks. This strain

3 Orcutt, Marion L. A Study of *Bacillus Necrophorus* Obtained from Cows. *J. Bact.* 20: 343 (Nov.) 1930.

4 Harris, J. W. and Brown, J. H. Description of a New Organism That May Be a Factor in the Causation of Puerperal Infection. *Bull. Johns Hopkins Hosp.* 40: 203 (April) 1927.



behaved as do our strains. Shaw<sup>5</sup> reviewed the literature on *Bacterium necrophorum* in human lesions and stated that the agglutination test could not be used for identification of the organism. He also stated that strains vary in their ability to hemolyze blood and ferment carbohydrates and in their pathogenicity for laboratory animals. Cunningham<sup>6</sup> has studied two cases in which similar organisms were found. In one case they were isolated from abscesses and necrotic tissue of the hip joint, lung infarcts, and in the blood. In this case there was a 15 cm bluish hemorrhagic ulceration in the lower part of the ileum which was thought to be the portal of entry of the necrophorus organism. In another case these organisms were found in a retropharyngeal abscess with gangrene and extension into the peritracheal and subcutaneous tissue and mediastinum. In this case there were submucous hemorrhages in the ileum. Shaw and Bigger<sup>7</sup> have described a case of necrobacillosis of the lung which they thought was caused by these organisms.



Fig. 6.—Centrifugated sediment from twenty four hour Rosenow dextrose brain culture inoculated with strain of *Bacterium necrophorum* from patient 19. From a photomicrograph with a magnification of 2700 diameters.

Similar organisms have been isolated from liver abscesses in man. Harris<sup>8</sup> gave the name *Bacillus mortiferus* to such an organism which he found in pure culture in a case of hepatic abscess in man. Norris<sup>9</sup> found an organism very similar to our strains in the liver abscess of a man. This organism was associated with anaerobic cocci, the colon bacillus and *Bacillus proteus*. The photomicrographs of Norris's organism show it to be quite like our strains. No pathologic condition of the intestine was reported in either of the liver abscess cases. This of course does not rule out the possibility that lesions were present in the colon at the time of the entrance of the emboli into the blood stream.

We have chosen to call the organisms which we have isolated and described *Bacterium necrophorum*. The genus *Bacterium* was used, since we have never observed true branching characteristic of *Actinomyces* and there was no spore formation, which characterizes the genus *Bacillus*, according to present nomenclature.

*Bacillus necrophorus* has been known for many years among veterinarians. As Orcutt points out, the organism is important in animal disease since it produces severe septic processes in a number of domestic animals. It may invade almost any tissue and is associated with various necrotic foci, as in calf diphtheria, necrotic ulcers of the intestine in hog cholera, metastatic necrosis of liver and lungs of cattle and swine, and necrotic stomatitis of calves, lambs and pigs.

Specimens of colon contents from patients with severe ulcerative colitis as well as some of our cultures of *Bacterium necrophorum*, when introduced into isolated healthy colons of three *Macacus rhesus* monkeys failed to produce ulcerative colitis.

The failure to reproduce ulcerative colitis in the healthy isolated colons of three monkeys is quite in keeping with the epidemiology of the disease, in that more than one case seldom occurs in a family.

*Bacterium necrophorum* was isolated in thirteen out of twenty cases of ulcerative colitis. From eight of these cases we were able to get subcultures of the organisms to grow (table 1). The failure to find *Bacterium necrophorum* in the remaining seven of the twenty cases does not mean that this organism was not present. The technical difficulties encountered in isolating and cultivating *Bacterium necrophorum* in the presence of large numbers of other intestinal bacteria are very great. Repeated attempts to culture the organism have often been successful when a single examination failed. In these studies it was possible to make repeated trials in only four of the twenty patients examined.

As is indicated in table 1, *Bacterium necrophorum* was isolated from the colon in one patient with amebic and one with bacillary (Flexner) dysentery. The significance of this finding is unknown.

#### SUMMARY

*Bacterium necrophorum* was found to be the predominant organism in the isolated colon of three patients with severe nonspecific ulcerative colitis. It persisted as the predominant type so long as the colon remained severely diseased and became less frequent during periods of remission. It was isolated by appropriate methods from the nonisolated colon in seven out of twelve additional cases of nonspecific chronic ulcerative colitis and in two cases of specific ulcerative colitis. Complement fixing antibodies for *Bacterium necrophorum* were found in the serum of fourteen out of sixteen cases of typical chronic ulcerative colitis and in only three of sixteen control patients. These facts, together with the abundant evidence in the literature supporting the pathogenicity of this organism to lower animals and man have led us seriously to consider *Bacterium necrophorum* as of etiologic significance in chronic ulcerative colitis.

**Endocarditis**—Pallor in aortic disease or clubbing of the fingers are signs which should at once arouse our suspicion of the presence of subacute infective endocarditis—Sir Thomas Horder quoted by Fisher, Alexander. *Aphorisms in Clinical Medicine Canad J Med & Surg* 77 166 (June) 1935.

5 Shaw F W. *Zentralbl f Bakt (abt. 1)* 129 132 (July 11) 1933.

6 Cunningham J S. Human Infection with *Actinomyces Necrophorus*. *Bacteriologic and Pathologic Report of Two Cases Terminating Fatally*. *Arch Path* 9 843 (April) 1930.

7 Shaw F W and Bigger J A. *Necrobacillosis of the Lung*. *J A M A* 102: 688 (March 3) 1934.

8 Harris N M. *J Exper Med* 6 519 1901 1905.

9 Norris Charles. *Suppurative Pylcphlebitis Associated with Anaerobic Micro-Organisms*. *J M Res* 6 97 1901.

LATE RESULTS OF TREATMENT OF  
CONGENITAL DISLOCATION  
OF THE HIPCLARENCE H. HEYMAN, MD  
CLEVELAND

I recall the feeling of satisfaction when, shortly after reduction of a congenital dislocation of the hip, I was unable to distinguish from physical examination alone which of the two hips had been dislocated. As these children returned for follow up examinations it was observed that they continued to have good function and no limp, but the roentgenograms were beginning to show abnormalities when closely compared with those of a normal hip. A few years later still these differences from the normal on the roentgenogram were becoming more marked. Frequently a patient would complain of pain on excessive use of the hip and not be entirely symptom free under the strenuous activities of normal childhood.

This induced me to consider whether or not the treatment was at fault, particularly in the face of published reports of end results at other clinics. I shall not go into detail to quote these figures. The combined statistics of the American Orthopedic Association published in 1921, the reports of Ridlon,<sup>1</sup> Soutter and Lovett,<sup>2</sup> Adams,<sup>3</sup> and others in this country and abroad generally show from 70 to 85 per cent of cures in unilateral cases, and around 60 to 75 per cent of cures in bilateral cases. My results, however, as determined by rigid criteria of anatomic reposition of the dislocation, normal function and normal roentgenograms, are by no means approaching these figures. It is true that if practically normal motion without pain, practically no limp, and the roentgenogram showing the head of the femur to be in the acetabulum are the only criteria necessary for the case to be classified as a cure my results are just about as good as those reported elsewhere. However, it does not seem accurate to classify a case as cured when roentgenograms show definite departures from normal anatomic form and development. The report of Farrell, Von Lackum and Smith<sup>4</sup> in 1926 was not so encouraging as others, and dissatisfaction with results of closed reduction has led Galloway to advocate open reduction in all cases. More recently Beck,<sup>5</sup> Becker,<sup>6</sup> Hilgenreiner,<sup>7</sup> Lindemann<sup>8</sup> and Schede,<sup>9</sup> among others have written of late end results and agree that reports of high percentages of so-called cures are misleading in that they represent clinical-functional rather than anatomic-roentgenologic results.

Believing that more of these critical analyses are instructive I am presenting my results. Of course

I am interested in percentages of successful reductions and percentages of relaxations. This, however, does not tell the entire story. In spite of reduction being maintained, it is recognized that there are developmental changes about the head or acetabulum. It is a question whether these changes are the result of trauma during reduction or incomplete reduction or whether they are a result of primary congenital defects or arrests of growth. Also to be considered is whether or not increased intra-articular pressure after reduction may cause alterations in growth. If these changes are primary they are in a great measure beyond control and will occur to a greater or lesser degree in spite of reduction of the dislocation. On the other hand it is possible that early reduction will put a check to or minimize these changes.

I recognized at the outset of this study that for this contribution to be of value I must differentiate three separate and distinct criteria: the immediate or primary result, the secondary or intermediate result determined after adolescence or cessation of growth, and finally a true or final result determined after the patient has reached mature life. I have been in the practice of orthopedic surgery long enough to study secondary or intermediate results in my personally treated cases but hardly long enough to give myself an opportunity of studying the true or end results. However, it would seem not to be difficult to estimate a prognosis as regards function and symptoms in later life when the degree of growth disturbance and the departures from normal at the cessation of growth or thereabouts have been observed. It would appear that a hip joint with an insufficiently developed acetabular roof or misshaped head would probably be more subject to early and more marked degenerative changes in spite of the fact that no subluxation recurs. It would also appear true that a hip joint at the end of adolescence with but little or no departure from normal development or anatomic form would not be likely to result in incompetence during maturity.

The basis of this study is an unselected and consecutive series of sixty cases. All have been followed long enough to determine at least the intermediate result. A study of the roentgenograms before reduction was made with the idea of formulating, if possible, an opinion as to prognosis. Comparisons between the hips on the dislocated and nondislocated sides were made before and after reduction on the assumption that the development on the nondislocated side was normal. It is realized, however, that some writers do not admit that there is ever a truly unilateral dislocation for they assert that a flat acetabulum is nearly always found in the supposedly normal hip joint. Without entering into this controversy it is my belief that, if these changes on the normal side are present, they are so slight as to show no appreciable differences from the normal picture and may admit being taken as a normal standard for comparison with the dislocated side.

Note was made of the age of the patient at the time of operation, the sex, the degree of dislocation, whether reduction was apparently successful, the ease or difficulty of reduction, and whether the operation was open or closed. In all cases manipulation was as gentle as possible and without the use of mechanical aids. All were treated after operation by fixation in plaster which was continued for six months. Roentgenograms were studied before and after operation to note the shape of the head and the degree of roughness or

Read before the Section on Orthopedic Surgery at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J. June 12, 1935.

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4. Farrell, B. P., Von Lackum, H. L., and Smith, A. de F. Congenital Dislocation of the Hip. *J. Bone & Joint Surg.* 8: 551-561 (July) 1926.

5. Beck, H. End Results of Closed Therapy of Congenital Dislocation of the Hip. *Deutsche Ztschr. f. Chir.* 234: 723-740 1931.

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7. Hilgenreiner, H. Prognosis of Closed Reduction of Congenital Dislocation of the Hip. *Joint Ztschr. f. orthop. Chir.* 60: 44-64 1933.

8. Lindemann, K. The Terminal Changes in Shape of the Acetabulum in Congenital Dislocation of the Hip. *Ztschr. f. orthop. Chir.* 60: 178 1933.

9. Schede, F. End Results of Reduction of Dislocated Hips. *Ztschr. f. orthop. Chir.* 60: 474 1934.

irregularity of its surface, the size of the capital epiphysis, the proportion between the capital epiphysis and the neck forming the articulating head, the length and breadth of the head and neck, the density, segmentation or erosion of the head, the width, inclination, and degree of irregularity of the epiphyseal line and its time of fusion, and the inclination and torsion of the neck



Fig. 1—Inefficiency of the roof of the acetabulum after closed reduction eight years before at the age of 5 years. This is a functional cure but symptoms are expected later. No pressure change at the head.

Similar notations were made concerning the acetabula: the depth, width, obliquity and effectiveness of the roof, the thickness of the floor, the relative degree of roughness or abnormal density, the width of the joint space above and below after reduction, the width of the Y-cartilage, and the proportion of the ilio-pubic with the ischiopubic portions of the innominate bone forming the acetabulum.

Also noted were the epiphyseal lines and growth centers about the hip and pelvis with particular regard to the comparative widths of the epiphyseal line at the ischiopubic junction, the time of appearance and size of the capital epiphysis of the greater and lesser trochanters, the crest of the ilium, the anterior superior spine, and the possibility of a growth center at the rim of the acetabulum as described by Morrison, the relative size of the femurs, ischium varum, the development of the anterior and posterior rims of the acetabulum, and the obliquity or degree of flaring of the iliac crests.

This was a rather comprehensive and ambitious outline and the material at hand results in few definite statements. The evidence available concerning a great majority of the points investigated is inconclusive. I shall not burden the reader with detailed figures of these comparisons but shall proceed directly to conclusions formulated as a result of them. For convenience I shall separate these under three headings: the head and neck of the femur, the acetabulum and the epiphyses.

#### HEAD AND NECK

1 The size of the capital epiphysis was smaller before reduction and its appearance was delayed. This finding was constant and is characteristic of congenital dislocation. It was not present in a case of traumatic

dislocation during birth or in pathologic dislocations in early infancy as a result of sepsis. It became broader and flatter after reduction in a considerable number of cases. The shape of the head varied greatly.

2 There was no segmentation or roughness of the dislocated head before reduction. The shape and size varied, but its structure was homogeneous. Irregularities in outline and density occurred after reduction and suggest that these changes are the result of increased intra-articular pressure rather than trauma during manipulation, since they were not seen in cases that had been manipulated one or several times with failure to reduce the dislocation.

3 The length of the head and neck was less than that on the normal side before operation and remained less after reduction.

4 The proportion of the capital epiphysis to the neck forming the articular head was greater than on the normal side before reduction, as 2:1 or 3:1 as compared with 1:1. In most instances this persisted after reduction.

5 The width of the epiphyseal line at the head of the femur showed no change as compared with the normal side either before or after reduction. No particular comparative roughness was noted, and the time of fusion remained about the same after reduction. This would suggest that future malformations about the head are not a result of an injury to this epiphysis.

6 After reduction it often appeared that the relative size of the head to the acetabulum is large. This, however, is not conclusive.

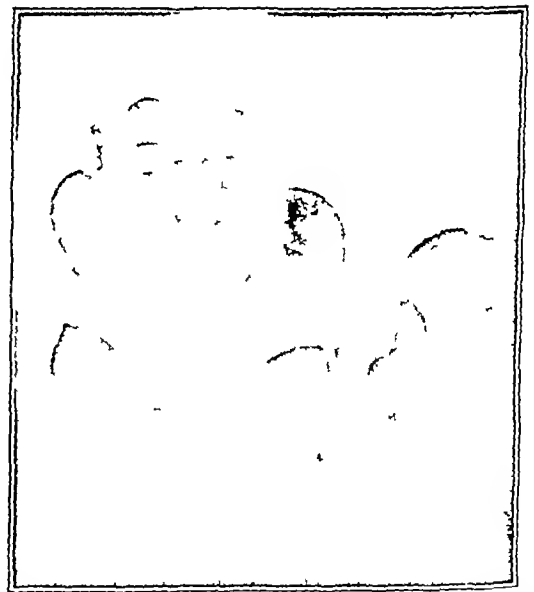


Fig. 2—Construction of a bone shelf to relieve symptoms resulting from incompetence of the acetabulum. In this case open reduction was done eight years before at the age of 7 years and bone shelf operation two years before at the age of 13 years.

7 In practically every case the inclination of the epiphyseal line from the horizontal before reduction was from 10 to 30 degrees greater than that on the normal side. After reduction the inclination approached the horizontal or even surpassed it.

8 The comparative density of the head and neck before and after reduction showed no constant difference. Occasionally it became less dense on the operated side.

9 The inclination of the neck was difficult to estimate, as this is easy to confuse with torsion. One may safely say, however, that it was generally greater than normal both before and after reduction. In the series studied there was only one instance in which after reduction the inclination was greater than normal, approaching a *coxa vara*.

10 Torsion on the flat plate is difficult to estimate. No conclusive statement can be made regarding this.

11 The departure from normal appearances in the head and neck after reduction were in direct relation to the age of the patient at the time of treatment and the severity of the dislocation. The final changes occurred chiefly in the acetabulum.

#### ACETABULUM

1 In practically every case the depth of the acetabulum was less on the dis-



Fig 3—A clinical functional cure following primary open reduction four years before at the age of 3 years. Note the obliquity and roughness of the acetabulum. No pressure change at the head.

located side before reduction and remained so after reduction, the usual proportion with the normal being about 2/3. The width of the acetabulum varied greatly; in some it was wider and in some, narrower.

2 The proportion of depth to width was less than that of the normal side before reduction and remained less after reduction in 90 per cent of the cases.

3 The thickness of the floor of the acetabulum at the Y-cartilage is difficult to estimate. In no case was it less than that of the normal side, and in about 75 per cent of cases it was apparently greater both before and after reduction.

4 The effectiveness of the acetabular roof on the normal side varied from 70 to 100 per cent. After reduction without redislocation, effectiveness of the roof varied from 40 to 100 per cent. In about 50 per cent of cases after reduction it was noted to be 100 per cent effective.

5 Before reduction there was no increased roughness or irregularity at the upper half of the acetabulum, but to a lesser or greater degree it was present in all cases after reduction.

6 A decreased density of the roof of the acetabulum was commonly found after reduction.

7 The obliquity of the acetabular roof on the normal side varied from 10 to 20 degrees. On the dislocated side this varied from 20 to 50 degrees. Obliquity decreased after reduction, but in approximately 50 per cent of the cases it remained greater than normal.

8 The vertical or upper width of the joint space after reduction was invariably the same as that on the normal side, but the width of the horizontal or lower joint space was commonly greater.

9 Soutter and Lovett's observation that the ischio-pubic portion of the acetabulum was greater than the ischio-pubic portion after 2 years of age was not confirmed. The estimates in this study of roentgenograms are that they remain 1/1 on both sides regardless of whether the hip was reduced or dislocated.

#### EPIPHYSES

1 The capital epiphysis changes have already been noted.

2 A constant finding was that the epiphysis at the ischio-pubic junction was wider and fused later on the dislocated side, even though reduction was accomplished early. This was not the case in traumatic dislocation at birth or in pathologic dislocations in early infancy.

3 The width of the Y-cartilage and the time of fusion at this epiphysis showed no differences on the two sides before or after reduction.

4 The epiphysis at the great trochanter was almost invariably smaller and appeared later on the dislocated side even when the hip had been reduced in early childhood. These differences cannot be accurately tabulated, but they appeared with sufficient frequency to indicate a delayed development there. No similar changes were noted at the lesser trochanter.

5 There was seen no definite epiphyseal or growth center at the rim of the acetabulum on either side to confirm the observations of Morrison.<sup>10</sup> This, however, is inconclusive, since one may not have had films at just the right ages to demonstrate them.

6 Ischium varum was not noted in any case. Observations concerning the epiphysis at the anterior superior spine and the crest of the ilium admit no conclusions. No conclusion can be drawn regarding the relative size of the two halves of the pelvis or the comparative flaring of the iliac crests. The thickness and density of the femoral shaft was commonly less on the dislocated side before reduction and in many cases continued for several years after reduction. This is comparable with the frequency of a slight muscle atrophy of the thigh continuing after reduction. An attempt to note differences in the development of the anterior and posterior rims of the acetabulum was unsatisfactory.

#### ANALYSIS OF RESULTS

I shall now analyze these results according to function and shall consider only those patients who were operated on five

years or more before. Fifty of these patients have been recently examined and have had recent roentgenograms. Results are classified as good, fair or failure. A good result must show the hip in place, normal or practically normal motion, no shortening, no pain and freedom from limp. A fair result must show the hip in place but there may be some limitation of motion.

Included in this group of fair results are three patients with a shallow acetabulum with subluxating head who were later operated on to make a bone shelf, with satisfactory results. Inability to reduce the dislocation or one that later on subluxated was classified as a failure.



Fig 4—Another clinical functional cure following primary open reduction of a 3+ dislocation two years before. Note the marked changes at the capital epiphysis interpreted to be a pressure change.

10 Morrison, L. B. A Study of the Hip Joint from the Standpoint of the Roentgenologist. *Am. J. Roentgenol.* 28: 484-520 (Oct.) 1932.

A marked limitation of motion with the hip in a position of deformity was also considered a failure.

Thirty cases, or 60 per cent, are considered as good results, eight, or 16 per cent, are considered as fair results, and twelve, or 24 per cent, are considered as failures. Of the good results twenty-five, or 83⅓ per cent, were unilateral dislocations and five, or 16⅔ per cent, were bilateral dislocations. Of the fair results six, or 75 per cent, were unilateral, and two, or 25 per cent, were bilateral.



Fig 5—A method of treating a severe 3+ dislocation in older children when the hip cannot be reduced. Sufficient bone is removed from the roof of the acetabulum to insure stability. Operation two years before at the age of 7 years. A functional cure except for the shortening. Note the small and dense capital epiphysis. A pressure change

resubluxation in two. The average age in the bilateral failures was 4.3 years and the cause of failure was resubluxation in one case and failure to reduce in the other five. Were it not for the fact that an attempt was made to effect reduction in several cases after the age of 8 years by the closed method the percentage of good results would be higher and the percentages of the fair results and failures would be less. These were in earlier cases in which the open operation would now be done.

It will be seen from these figures that with increasing age less likelihood of a good result is to be expected, and that a unilateral dislocation has a better prognosis than a bilateral one. These conclusions have long been recognized and are not different from the reports of others.



Fig 6—Traumatism of manipulation is not the cause of changes about the head and acetabulum. Two attempts at closed reduction three years before at the age of 3 years. Open reduction of the right hip one year before at the age of 5 years. No head changes on closed side but present on the open side.

cent showed very little departure from normal, another 20 per cent showed moderate but definite changes in

either one or both, and 60 per cent showed marked changes. If practically normal physical and roentgenologic changes are adopted as criteria, the percentage of cures would not then be 60 but only 10, with perhaps another 10 per cent questionable. The degree of dislocation was graded 1+, 2+ and 3+. In 73 per cent of the 2+ and 3+ cases there were moderate to marked subsequent head changes. These were present in only 27 per cent of the 1+ dislocations. The average age at the time of reduction in the group showing normal roentgenologic changes was 2.4 years, that in the group showing only moderate changes was 2.5 years, while that in the group showing marked changes on the roentgenogram with functional cure was 4.1 years.

Naturally it would be of interest to investigate late head and acetabulum changes in patients who had been treated by open reduction instead of by the closed. My cases are of no value in determining the relative value in this respect because I have had only five cases in which open reduction was done without a previous attempt at closed reduction. Again, the ages of the patients on whom open operation was done were all 5 years or more with the exception of one child of 3 years.



Fig 7—Again no head or acetabular changes following two closed manipulations two years before at the age of 4 years. Incidentally, note the delayed fusion at the ischiopubic junction on the dislocated side which is characteristic of congenital dislocation.

age with secondary subtrochanteric osteotomy to correct anteversion.

#### PROGNOSIS

The question then arises as to the prognosis in any given case at the time treatment is instituted. Will the child limp and will any abnormality remain? These questions are difficult to answer. It is agreed that the earlier the reduction the more favorable the prognosis, but the fact remains that the result is not always favorable even when the dislocation is reduced as soon as it is discovered. In congenital dislocation of the hip one does not deal with a dislocation in the true sense of the word but with a more or less severe inhibition of development manifested by a shallow acetabulum, abnormal acetabular index and delayed development of epiphyses. Prognosis, therefore, depends on the severity of the primary inhibition of growth, and this study suggests no clue as to how this may be estimated accurately before treatment is instituted. The roentgenogram in the very young does not give much information other than the severity of the dislocation, the obliquity of the acetabular roof, and the relative depth of the acetabulum in unilateral cases. The presence or

absence of an epiphysis at the upper border of the acetabulum, according to the observations of Morrison cannot be determined at an early age

#### SUMMARY

In discussing results of congenital dislocation of the hip it is proper to classify them as immediate or primary, intermediate or secondary and finally the true or end results. The later intermediate results of sixty cases of congenital dislocation of the hip give a more accurate estimate of the true final result in mature life. Anatomicoroentgenologic cures are contrasted with the usually reported clinical functional cures. The percentage of cures according to the latter criteria are similar to reports of others but according to the former are only from 10 to 20. It is believed that the reports of high percentages of so-called cures are misleading.



Fig 8—An anatomicoroentgenologic cure together with a functional cure. A unilateral closed reduction six years before at the age of 2 years.

Roentgenograms are studied with particular reference to abnormalities of growth centers and epiphyses, and changes at the head of the femur and acetabulum. These changes exist at each place but are present chiefly in the acetabulum. While primary results have been and can be still further improved, it is questionable whether this will affect the incidence of faulty development of the acetabular roof or head of the femur. However, the stimulation of normal function may minimize its progression.

Head changes are not identical with those of Legg-Perthes' disease, and trauma at the time of reduction is not considered an important factor in the appearance of these changes. While no conclusions are arrived at concerning the cause of the head changes it is suggested that in addition to possibly a faulty primary constitutional development they are due to the suddenly increased pressure on the head after being forced into the acetabulum and continued on bone demineralized by prolonged fixation. One must be mindful of the error however of arriving at any fixed conclusions now for as has been well stated by Schede the present end results of treatment carried out many years ago do not allow any conclusions as to prognosis in cases treated by present methods.

Of great value would be a comparison of a similar study made on patients treated by primary open reduction. It is my belief that the age of the patient at the time of treatment and the severity of the dislocation are the chief factors determining late changes about the head.

#### ABSTRACT OF DISCUSSION

DR. A. BRUCE GILL, Philadelphia. A great battle is raging at present in the orthopedic world as to the treatment of congenital dislocation of the hip. Bloodless reduction of congenital dislocation is successful in a certain proportion of cases, which may be as high as 60 or 65 per cent, but it is evident from the cases Dr. Heyman has reported that many which are thought to be successfully reduced present subluxation in later years or more rarely even complete luxation. My own experience amply confirms this observation. A number of orthopedic surgeons today never attempt bloodless reductions but practice open operation. To my mind an open reduction does not guarantee against subsequent subluxation any more than does a successful closed reduction. It is probably due to the fact that in these hips whether reduced openly or bloodlessly, the socket is insufficient for the head. It is either too shallow or too oblique or both. Dr. Heyman's illustrations as well as many x-ray films in my own cases show that shortly after either closed or open reduction the socket is insufficient. I have therefore maintained that if it is necessary to do an open reduction, the obliquity and the insufficiency of the acetabulum should be corrected at the same time by means of the shelf operation. It is my custom to attempt bloodless reduction in all patients less than 4 years of age. If the reduction is apparently successful roentgen examination is made. If this shows that the head of the femur is opposite the socket but not completely in it, I advise open operation with the construction of a shelf. If the head seems to be securely within the socket the child is kept in a plaster cast for four months. The child is allowed to move about in bed for a week or two. If the head still remains in the socket the child is then allowed to walk. If redislocation occurs at any time after the cast has been removed open operation is advised. One frequently sees in bilateral dislocations that one hip can be reduced bloodlessly and this reduction is maintained for an indefinite number of years and apparently is a normal hip, while the other hip either cannot be reduced bloodlessly or it subluxates shortly after the plaster cast is removed. I still am a firm advocate of bloodless reduction but I think that the four months test determines fairly accurately whether or not a hip so reduced will be satisfactory for the remainder of the patient's life. After all, the closed reduction, when really successful, cannot be surpassed by any open method of operation in producing a hip that is practically normal.

DR. SAMUEL KLEINBERG, New York. When one reflects on the pathologic anatomy in congenital dislocation of the hip, there is little wonder that a perfect anatomic and functional result is seldom obtained. Even in relatively simpler conditions the therapeutic result is only exceptionally perfect. My experience coincides with that of the author in that in only a small percentage of cases of congenital dislocation of the hip have I been fortunate enough to obtain both normal function and normal anatomic restitution. The factors that militate against the attainment of the ideal result are: 1. Primary osseous and soft tissue maldevelopment which in many cases precludes an ideal result. 2. Lack of early diagnosis. The dislocation is frequently not recognized until the child is 2, 3, 4 or even more years old. In a particularly favorable group of seventeen cases treated recently the average age was 22½ months. Thus the patient had been walking from six months to perhaps as many years before treatment was begun during which time the structural defects have become confirmed. 3. Trauma during reduction. It is impossible to avoid some measure of trauma. If the posterior margin of the acetabulum is narrow it may be necessary to hold the limb in axillary abduction or in marked extension. In either circumstance there will be marked tension on the hip tissues with some disturbance in the vascular supply. 4. Too early weight bearing. Reviewing my failures I found that I have erred in allowing weight bearing in the seemingly stable easy reductions six months after the reduction. 5. Interrupted treatment. Not infrequently reasons such as intercurrent illnesses cause temporary discontinuance of treatment which interferes with the success of the treatment. The problem at the present time is concerned with the available means to obtain the best results even though these are chiefly functionally and only occasionally anatomically satisfactory. The mode of procedure includes the acetabular index, education of the general practitioner and pediatrician in the essential clinical evidence of



a hip dislocation, institution of treatment as soon as the diagnosis is established, a traumatic technic and prolonged post-operative freedom from weight bearing

DR JOSEPH A FREIBERG, Cincinnati This is an honest and unbiased survey of a moderately small series, treated by a single surgeon, which is of more importance than a survey of a large series in which the cases are treated by a number of different surgeons with varying technics. Acetabular insufficiency is clearly brought out. I believe that artificial widening of the acetabulum is too frequently omitted in reduced cases. Relative instability in a reduced hip is prone to cause changes in the joint. In discussing results it is not fair to include failures of reduction. I feel certain that many cases in the older age group, 6 or above, would have excellent functional results if a palliative operation had been carried out rather than an attempted reduction. In third degree dislocations preliminary fixed—not balanced—traction will often yield amazing results. Not only may the head be brought down to the level of the acetabulum, but in my experience actual reduction may follow abduction of the leg in fixed traction. Crego has given much valuable help in this method of treatment.

DR PAUL C COLONNA, New York There has been a steady elevation of the standard of what constitutes a satisfactory result in congenital dislocation of the hip. Orthopedic surgeons were formerly satisfied with simply replacing the hip in its normal position. Then they became anxious to get function restored and now they seem to be aiming at the restoration of the roentgenographic changes. Whatever it is that causes the changes in the head whether or not it is due to vigorous manipulation, and we know that in some cases it undoubtedly is, it is true that in but few cases is it possible to examine these hips by a primary open operation. Most of them have been subjected to previous forms of closed manipulation. For the past few years I have been interested in a form of operation similar to an arthroplasty in doing an open operation in these cases. The hour glass portion of the capsular covering about the head is preserved and after a stage of preliminary traction, the open operation is done and the capsule-covered head is placed in the deepened acetabulum. Dr Gill has mentioned the fact that the obliquity in the shallow acetabulum must be changed. He has obtained it by a shelf. I have obtained it by deepening the acetabulum and by interposing synovial lined capsule tissue thereby increasing the movement ordinarily obtained when the acetabulum is reamed. Two cases (which are not in any way presented as an end result) in which operation was performed two years ago show the normal appearing epiphysis in which primary open operation was performed by the method described. Out of the ten in which I have used this method these two are the only ones that had no previous treatment. The hip is opened by the usual lateral incision. The greater trochanter is chiseled off and turned upward with its attached abductors. It brings into view the capsule, which can be easily separated from its surrounding tissue. That is followed down through its isthmus and cut at that point. The head is inspected, the ligamentum teres is inspected and then this sac is closed with one or two sutures. The site of the original acetabulum is exposed and deepened and this capsule-covered head is then placed into the socket. The greater trochanter is resutured back into place. The roentgenograms of two cases in which operation was performed at  $4\frac{1}{2}$  and 5 years of age, both after an interval of two years show excellent ranges of motion no shortening and an almost normal appearing upper femoral epiphysis.

DR CLARENCE H HEYMAN, Cleveland I agree with Dr Kleinberg regarding early weight bearing. It has struck me that after this prolonged fixation in plaster there must be bone atrophy, and too early weight bearing may cause some further flattening of the head of the femur. I subscribe to Dr Gill's idea of pulling down the head of the femur in the severer type of dislocations. I believe that a year ago he described a method of a turnbuckle in a plaster cast. I have since used that a couple of times and found it more efficient than skeletal traction.

## INTUBATION STUDIES OF THE HUMAN SMALL INTESTINE

### III A TECHNIC FOR THE COLLECTION OF PURF INTESTINAL SECRETION AND FOR THE STUDY OF INTESTINAL ABSORPTION

W OSLER ABBOTT, MD  
AND

T GRIER MILLER, MD  
PHILADELPHIA

During 1934 we<sup>1</sup> described a technic for the rapid intubation of the human small intestine. It involved the use of a double-lumened rubber tube of relatively small caliber, to the distal end of which was attached a collapsible rubber balloon that could be distended at will through one of the lumens. The balloon, when distended in the bowel, served the threefold purpose (a) of stimulating sufficiently active peristalsis to propel the apparatus throughout the whole small intestine in from three to four hours, (b) of forming an obstruction to the flow of intestinal contents so that



Fig 1—Segment of small intestine isolated between two air filled balloons. A after filling with an opaque solution. B after aspiration of the solution. Note that none of the solution passed out of the segment and that the balloons maintained the same positions after aspiration.

they could easily be aspirated from above the balloon through the other lumen of the tube and (c) of providing a means for securing kymographic records of pressure changes within the small bowel. With this method, studies on the chemical characteristics of the contents of the normal small intestine, by Karr and Abbott,<sup>2</sup> and studies of the action of morphine on the motor function of the small intestine, by Abbott and Pendergrass,<sup>3</sup> have been accomplished in this clinic.

From the Gastro-Intestinal Section of the Medical Clinic Hospital of the University of Pennsylvania.

Aided by a donation from Mr. Samuel S. Fels and by a grant from the Faculty Research Committee, University of Pennsylvania.

This technic and various results obtained by its use were presented at the Atlantic City Session of the American Medical Association, June 10-14, 1935, as a part of the Group Exhibit on the Small Intestine.

1 (a) Miller, T. G. and Abbott, W. O. Intestinal Intubation. A Practical Technic. *Am J M Sc* 187: 595-600 (May) 1934. (b) Small Intestinal Intubation. Experiences with a Double Lumened Tube. *Ann Int Med* 8: 85-92 (July) 1934.

2 Karr, W. G. and Abbott, W. O. Intubation Studies of the Human Small Intestine. IV. Chemical Characteristics of the Intestinal Contents in the Fasting State and After the Administration of Acids of Alkalis and of Water. *J Clin Investigation* to be published.

3 Abbott, W. O. and Pendergrass, E. P. Intubation Studies of the Human Small Intestine. V. The Effects of Morphine on the Motor Function of the Small Intestine. presented before the American Roentgen Ray Society at Atlantic City, Sept. 24-27, 1935.

Samples of the contents of the small bowel, aspirated through such a tube, consist of a mixture of the materials normally present, including the unabsorbed portions of saliva, of gastric juice, of biliary and pancreatic secretion and of succus entericus, as well as of substances that may be administered by mouth, but the technic does not permit the extraction of pure intestinal secretion, free from an admixture of substances coming down from above, or the quantitative study of intestinal absorption. In the latter respects it fails to provide a method of study comparable to the operatively isolated intestinal loop in animals described by Johnston<sup>4</sup> and by Ebeling.<sup>5</sup> For these additional purposes in man, however, we have been able to develop, by modification of our original apparatus and the technic of its use, an equally satisfactory method, as follows:

A rubber tube of the same size as our double-lumened one (6 mm in diameter) but with three lumens, each of adequate caliber, was designed and finally was constructed.<sup>6</sup> Two of the lumens are used for the control respectively of two collapsible balloons, one at the distal end of the tube and the other at a variable distance proximal to that end (fig 2). The distal balloon, when distended in the duodenum, serves to secure passage of the apparatus to the desired level in the intestine and then to prevent any chance regurgitation of contents from below, the proximal balloon, distended only after the proper position is attained, to prevent the passage of intestinal contents from above. To maintain distention of the balloons during an experiment, the air content of each is kept at a fixed volume (determined before the intubation) by clamping its proximal tube, or the volume is allowed to vary with intra-intestinal pressure, while the pressure in the balloon is stabilized (usually at 20 to 30 cm of water) by the insertion into the air-filled system of a hydrostatic unit (fig 3). The latter arrangement has the advantages of causing less discomfort to the patient and of offering minimal resistance to the progress of peristaltic waves but in our experience has not so often prevented the leakage of contents between the balloon and the intestinal wall. The third lumen of the tube, through perforations in the outer wall between the balloons, communicates with the interior of the intestinal segment. Aspiration of the

contents of the segment is accomplished by the use of another hydrostatic unit, arranged to maintain a constant negative pressure of about 50 cm of water.<sup>1b</sup>

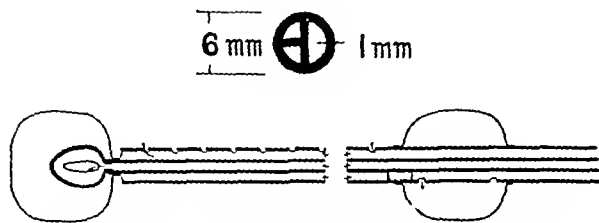


Fig 2—Diagram to illustrate three-lumened tube and the arrangement that permits control of two balloons and communication with the intervening isolated segment of intestine.

contents of the segment is accomplished by the use of another hydrostatic unit, arranged to maintain a constant negative pressure of about 50 cm of water.<sup>1b</sup>

Thus a segment of the small intestine of man may be isolated and made available for various experimental

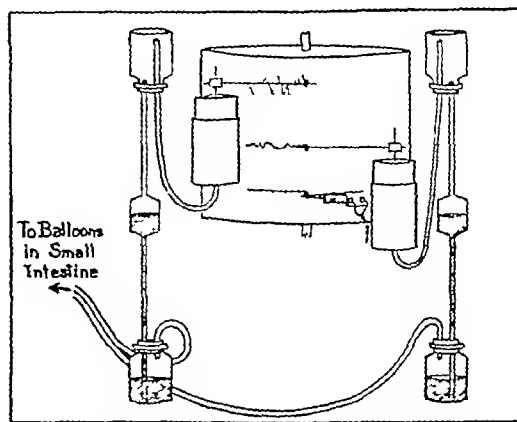


Fig 3—Diagrammatic representation of apparatus showing the two lumens of tube that communicate with the balloons in the intestine and their attached tubes so arranged as to maintain a constant pressure in the balloons and to permit kymographic records of changes in intra-intestinal pressure. Shaded areas indicate water pressure units in air-filled systems.

In support of these contentions we cite the following observations:

1 A 10 per cent vital red solution, introduced into the bowel proximal to the segment by an additional

*Recovery of Injected Solutions from Isolated Segments of the Intestine to Show Efficiency of the Technic for the Study of Absorption\**

| Case | Distance of Segment Beyond Pylorus Cm | Solution Introduced |                            | Amount Recovered in per Cent of Amount Introduced |           |
|------|---------------------------------------|---------------------|----------------------------|---|-----------|
|      |                                       | Amount Cc           | Substance Gm               | Fluid   | Substance |
|      |                                       |                     |                            | Immediately after Injection                       |           |
|      |                                       |                     |                            |   |           |
| 81   | 90-120                                | 100                 | Sucrose 8.24               | 106   | 99        |
| 79   | 90-120                                | 100                 | Iron ammonium citrat 0.0.0 | 101   | 97        |
| 77   | 60-90                                 | 100                 | Iron ammonium citrat 0.0.0 | 98  | 99        |
| 90   | 90-120                                | 75                  | Ferrous sulphate 0.0.0     | 97  | 96        |
| 94   | 90-120                                | 75                  | Ferrous sulphate 0.0.0     | 98  | 94        |
|      |                                       |                     |                            | One hour after Injection                          |           |
| 72   | 120-150                               | 100                 | Dextrose 4.25              | 84  | 14        |
| 73   | 90-120                                | 100                 | Dextrose 4.25              | 111   | 40        |
| 81   | 90-120                                | 100                 | Sucrose 8.24               | 137   | 50        |
| 77   | 60-90                                 | 100                 | Iron ammonium citrat 0.0.0 | 110   | 100       |
| 94   | 90-120                                | 75                  | Ferrous sulphate 0.0.0     | 103   | 67        |

\* Chemical determinations by Dr W G Harr chemist to this clinic

small tube attached above the upper balloon, could not be recovered from the isolated segment, even after repeated washings, although normal intestinal secretion was easily obtained

<sup>4</sup> Johnston C G. A Method for Making Quantitative Intestinal Studies. *Proc. Soc. Exper Biol & Med* 30: 193-198 (Nov.) 1932

<sup>5</sup> Ebeling W W. Absorption of Dextrose from the Colon. *Arch Surg* 20: 1039-1046 (Dec.) 1934

<sup>6</sup> Constructed by the United States Rubber Products Company of New York City



2 A water solution of a radiopaque substance, introduced into the segment by the third or perforated lumen of the tube, was easily visualized by the roentgen rays, but none of the opaque substance appeared above or below the isolated segment (fig 1)

3 After the introduction of from 75 to 100 cc solutions of sucrose and of iron compounds into 30 cm segments, the fluid that could be withdrawn equaled, within 6 per cent, the amount injected and the substance equaled, within 6 per cent, the amount originally in the solution, as shown in the accompanying table

4 The detailed proof of absorption has been presented separately by Abbott and Karr,<sup>7</sup> but the table shows that, in most instances when solutions of dextrose, of sucrose or of iron compounds were introduced and allowed to remain for one hour, only a part of the substance was recovered

Simultaneously with studies of the secretory and absorptive functions of the intestine, the technic permits the recording on a kymograph of intra-intestinal pressure changes at the level of each balloon. For this purpose the constant pressure system for maintaining distention of the balloons, already referred to, must be employed (fig 3). When the third lumen of the tube is not to be used for injection or aspiration purposes, it also may be connected with a balloon, allowing records of pressure changes from three bowel levels at the same time. With the balloons placed closely together, tracings to indicate the steady advance or reversal of tonus gradients or of peristalsis may be secured. By spacing the balloons appropriately and determining their location by the fluoroscope, simultaneous and comparative study of the motor function in various parts of the small intestine or in the small intestine and the stomach or colon may be made. Other uses for the apparatus and the technic will occur to those interested in this field of study.

Thus, based on our previous experience with intubation of the human small intestine by means of a two-lumened rubber tube, we now present an equally simple and practical technic for the isolation of a segment of the small intestine between two rubber balloons, for the aspiration of pure intestinal secretion, for the study of intestinal absorption and for the more detailed study of intestinal motor phenomena.

Thirty-Sixth and Spruce streets

7 Abbott, W. O. and Karr, W. G. to be reported

**The So-Called Hot Flashes**—The most characteristic symptoms of the menopause are the so called hot flashes, often accompanied by sweats. These may be noticed many months before the actual disappearance of menstruation, while in other women they do not appear until a considerable time after the cessation of the function. The flashes commonly affect only the head, neck and upper part of the chest, the skin over these suddenly becoming red, sometimes almost the color of a boiled lobster, while the woman experiences a feeling of heat and at times suffocation. In addition to the flashes some women experience flashes of heat and burning over the entire body. The flashes are sometimes followed by profuse sweating, and, indeed, the sweating may be much more annoying than the flushing. In the great majority of women, these symptoms, while annoying are not sufficiently frequent or severe to cause any very great discomfort, and the sensible woman, knowing the normality of the symptoms and their temporary nature, is apt to make a joke of them or, at any rate, to take them lightly. In other words, the majority of women going through the menopause need no medical treatment of any sort.—Novak, Emil. *The Woman Asks the Doctor*, Baltimore, Williams and Wilkins Company, 1935

## THE INTENSIVE TREATMENT OF MORPHINE ADDICTION

THEOPHIL KLINGMANN, M.D.  
AND  
WILLIAM H. EVERTS, M.D.  
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With the inception of morphine by Serturmer in 1803, man was given a new and more efficient means of relief from pain.<sup>1</sup> Little did Serturmer realize that but a few years later the medical profession would be faced with the problem of addiction to this drug and searching for a successful means of relief when it was taken or given inadvertently. The problem becomes even greater when it is realized that the profession is not dealing with mentally normal men and women in addiction, with the exception of the few who have taken the drug over long periods of time for some painful and possibly incurable malady. Certainly there is the possibility that any person using a narcotic drug over a long period of time is in danger of becoming addicted to it, but it is very doubtful whether a normal person ever actually becomes a drug addict.

One may classify those addicted, whether they are addicted to morphine and related drugs, cocaine, the barbiturates or alcohol, into three general groups. In the first group would be placed the aforementioned organically afflicted individuals who take the drug for relief from physical pain. These, in the great majority of cases, are otherwise stable persons, and it is very doubtful that they ever receive any mental pleasure from morphine, aside from the pleasure brought about by relief from their pain. In this group, as a rule, the patient is successful in keeping the dosage down to absolute requirements and, when the primary cause of the distress is removed, offers excellent cooperation in the treatment and consequently is relieved of the addiction. The second group, also a small one, consists of the psychotic patients. One not too infrequently sees a mentally depressed patient of the manic-depressive or a reaction-depressive type who will take the drug much the same as others of the same type are frequently seen to take alcohol. The problem of treating the addiction in such cases is never serious, for with improvement in the psychosis the response to treatment is always good and recovery is frequent. The third, into which the great majority of cases fall, is the constitutional psychic inferiority group. Their sense of inferiority leads these patients into addiction as a means of escape from their environment. As Kolb<sup>2</sup> has so well said, "they are struggling with a sense of inadequacy, imagined or real, or with unconscious pathological strivings that narcotics temporarily remove, and the open make-up that so many of them show is not a normal expression of individuals at ease with the world, but a mechanism of inferiors who are striving to appear like normal men." It matters little through what channels they are introduced to the drug, the noteworthy fact being that, the greater their inherent mental or personality defect, the greater will be the problem of permanent relief and the less likely are they to make a real satisfactory environmental

Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association Atlantic City, N. J., June 13, 1935.

1 The 125th Anniversary of Discovery of Morphine. *J. Am. Pharm. A.* 18: 375 (April) 1929.

2 Kolb, Lawrence. Types and Characteristics of Addicts, *Ment. Hyg.* 9: 300 (April) 1925. Pleasure and Deterioration *ibid.* 9: 699 (Oct.) 1925.

adjustment Those who more closely approximate the norm and have the defect largely in their environment are always excellent subjects for treatment, make a good adjustment and frequently are permanently relieved from the habit Magid,<sup>3</sup> Pettey and others believe that there is an unmistakable withdrawal symptom complex after birth in the offspring of addicted mothers

There can be no denying that addiction will ultimately lead to great physical and mental deterioration if not curbed Though very moderate use of opiates may not produce any very definite physical deterioration, one sees only too commonly in more severe addiction a very undernourished, pale yellow complexioned, and mildly anemic individual with a seriously disturbed digestion, poor appetite alternating with voracious hunger and thirst, obstinate constipation and occasionally diarrhea There is often a functional amenorrhea, and sexual impotence is the rule The motor nervous system shows an increased reflex irritability, and tremors are present Mentally at this stage the patient is timid, fearful, secretive and asocial, often losing all sense of proportion and decency, and as a rule is an abominable liar Sooner or later the patient's general resistance is so lowered that he falls an easy victim to some intercurrent disease, and hence rarely reaches old age—though the habit may persist for many years

Morphine, by action, dulls the perceptions and in addiction lulls the subject into a sense of security far out of keeping with the obvious facts of reality By its central action it allays pain, lessens apprehension and discomfort and compels sleep It stimulates the parasympathetic autonomic system, and during addiction this is notable, as already mentioned During withdrawal of morphine in addiction and the sudden release of these effects, it is readily understood why these patients should have such a very distressing time and so often fear "taking the cure," as they call it

The intensive treatment of addiction that we shall describe is through the use of scopolamine and pilocarpine The use of scopolamine in treating morphine addiction is not new It was first reported by M K Lott in 1901, was later modified by Pettey, and in 1905 was used by Wagner and Reiwald Since that time, Lambert,<sup>4</sup> Towns, Sceleth<sup>5</sup> and others reported its use in opium addiction However the method of administration of scopolamine and pilocarpine in this communication offers distinct advantage over any previously described methods, a modification of the treatment first outlined by Sir James Purves Stewart of London<sup>6</sup> We offer it as a rapid relief from the craving for the drug, in a simplified, painless and non-hazardous manner, without the usual discomforts of withdrawal The patient is first given some insight into what we propose to do and is assured that permanent relief from the habit is possible He is also informed that he will receive absolutely no more morphine when the treatment is started Owing to the increased psychomotor activity during the intensive phase of the treatment, constant nursing service is required Saline catharsis, 5 drachms (19 Gm) of Carlsbad salt for one or two doses, precedes treatment Scopolamine and pilocarpine are given hypodermically as follows

1 Scopolamine hydrobromide,  $\frac{1}{200}$  grain (0.00065 Gm) one dose.

<sup>3</sup> Magid M O Narcotic Addiction in Females M J & Rec. 129 306 (March 20) 1929

<sup>4</sup> Lambert Alexander The Obliteration of the Craving for Narcotics J A M A 53 985 (Sept. 25) 1909

<sup>5</sup> Sceleth C E A Rational Treatment of the Morphine Habit J A M A 66 860-862 (March 18) 1916

<sup>6</sup> Stewart J P Personal communication to the authors

2 Scopolamine hydrobromide,  $\frac{1}{200}$  grain (0.00032 Gm), five doses, one every hour

3 Scopolamine hydrobromide,  $\frac{1}{200}$  grain, twenty-one doses, every two hours

4 Pilocarpine nitrate one-eighth grain (0.008 Gm.), two hours after the last dose of scopolamine and continued for a total of five doses, one every hour

The central effect of scopolamine is one of a brief period of cortical stimulation, followed by a prolonged mild depression of the psychic and motor centers Its peculiar anesthetic action tends to abolish completely the memory events that occur during the treatment After the third or fourth dose of scopolamine the patient develops a mild low numbing delirium He is quite busy, and often amused, by figments of his imagination and the occasional visual hallucinations of a not unpleasant variety—picking at imaginary insects on the bed and the like He cooperates very well, obeys commands promptly and partakes freely of food and drink, and the enteric and urinary elimination is good He rests at short intervals throughout this period The peripheral action of scopolamine is like atropine and will therefore allay pain by its effects on sensory nerve endings The strong effect on motor nerve endings in all smooth muscle will tend to allay any abnormal cramping of visceral muscles, and the strong effect on the secretory nerve endings will check any excess mucous or salivary secretions so commonly seen in

#### Preparation to Supplant Blood Calcium

|   |                                |
|---|--------------------------------|
| R Scopolamine hydrobromide                                    | $\frac{1}{2}$ grain (0.008 Gm) |
| Calcium phosphate compound                                    | 2 drachms (7.8 Gm)             |
| Mix and divide into 24 powders                                |                                |
| Sig 1 capsule three times a day before meals                  |                                |
| Calcium phosphate compound contains the following ingredients |                                |
| Magnesium phosphate   | 2 parts                        |
| Calcium phosphate (dibasic)                                   | 8 parts                        |
| Calcium glycerophosphate                                      | 8 parts                        |
| Potassium bicarbonate   | 32 parts                       |
| Sodium bicarbonate  | to make 100 parts              |

ordinary withdrawal methods The third nerve effect dilatation of the pupils, passes off rather early As for the elimination of scopolamine, much of it is oxidized in the body and the remainder is removed by the kidneys The action of pilocarpine is directly antagonistic to scopolamine in its effects on the secretory nerve ends, motor nerve ends in smooth muscle, vagus nerve ends, and the third nerve It does not affect the sensory nerve ends Pilocarpine is therefore a powerful diaphoretic, stimulating sweating and salivary and pancreatic secretions It has no cortical effect It is eliminated in the urine, sweat and saliva After the second dose of pilocarpine the patient's delirium rapidly subsides, and by the end of the course of pilocarpine he is mentally clear in every respect Throughout this time he has perspired profusely and is shortly very comfortable physically in every respect In no case did collapse or any other distress develop which might necessitate cessation of treatment

Now, for the first time, one sees the patient in something closely resembling his normal self mentally Every patient treated has stated that he did not recall what had taken place during the treatment, had not experienced any physical or mental distress whatever, and had no desire for morphine At this time he displays a very healthy appetite, and a high caloric diet is prescribed

The level of blood calcium falls during the administration of sedatives and hypnotic drugs, which is also true during the administration of morphine We have

devised to supplant this, during convalescence of the patient, by the preparation given in the accompanying table. Scopolamine in small doses is added for its mild sedative effect, which is accentuated when combined with calcium.

This medication is continued for from six to eight weeks. The average period of hospitalization is six weeks. After the intensive treatment (forty-eight hours) the patient's mental and environmental status is carefully investigated and all possible adjustments are made. The patient is discharged and advised to return to his former occupation if the environment is not objectionable. He is requested to return to the outpatient department at intervals of from two weeks to a month, for three months. After this, inquiries are made from time to time for three and one-half years.

The daily amount of morphine taken by individual patients just before the treatment was undertaken varied from 10 to 50 grains (0.65 to 3.2 Gm.) administered hypodermically or intravenously. Fifty severe cases were treated in this manner. Ages ranged between 26 and 57 years. Eighteen were women and thirty-nine were men. Twelve of the women were school teachers and six had business occupations. Twenty-four of the men followed professions and fifteen were in business. Forty-eight of the patients were badly adjusted and nine were suffering from physical illness, which had led to the morphine addiction. Thirty-one of the fifty-seven patients are known to be free from the habit since treatment, after three and a half years. Of the remaining twenty-six, seven returned with the habit, having relapsed after having been free from the habit for from three to ten months after treatment. The remaining nineteen patients could not be reached to obtain information after three and a half years. Of the total number of fifty-seven patients, 54.4 per cent are known to have been permanently relieved, 12.2 per cent are known to have relapsed under the same circumstance that brought about the first addiction. In 33 1/3 per cent of the cases contact could not be made to obtain information regarding the result of the treatment after three and one-half years.

#### CONTRAINDICATIONS

The cases treated were successive admissions and presented no complicating diseases, one patient in whom a bronchopneumonia developed on the second day after entering the hospital was not treated by this method. This patient succumbed to the illness on the ninth day. Cardiovascular disease and advanced age are contraindications for this method of treatment.

#### SUMMARY

1 The types commonly addicted to morphine are, briefly, the organically afflicted, the psychotic and the psychic inferior.

2 Scopolamine and pilocarpine utilized as outlined is an intensive, nondistressing and safe means of treatment for rapid relief from the craving for morphine, putting the patient in an optimum condition for careful mental and physical investigation in the shortest possible time and hence markedly reducing a long drawn out rehabilitation.

3 Statistics of cases treated reveal successful relief from the morphine habit in 55 per cent, with 12 per cent known relapses and 33 per cent with no satisfactory follow-up data.

Mercywood Sanitarium

#### ABSTRACT OF DISCUSSION

DR EDWIN G. ZABRISKIE, New York. My own experience with scopolamine has always frightened me, because I have seen some extremely bad effects from the delirium that sometimes prevails in the treatment and in the withdrawal. The administration of pilocarpine at the end of the administration of scopolamine is something that I am unfamiliar with and I can see how it would be of great value. I have come in contact with a case of Dr. Alexander Lambert of New York, who has been experimenting and trying out a new synthetic compound developed in New York by a Russian chemist, in which a modification of the salicylic acid molecule is obtained, and its use in the administration and the withdrawal of morphine has had for the most part very happy results. The use of morphine over a prolonged period affects the sympathetic nervous system, indeed, some people say that it produces real allergic effects, it has a very definite effect on the autonomic nervous system, as can be realized from the so-called withdrawal symptoms, and if variations in the blood count which occur during withdrawal are added to that, by which one can determine very often whether or not the withdrawal is being properly undertaken, I think that it leaves no doubt of its influence on the sympathetic nervous system. The chemist who invented rossium has brought up a theory that there is always a minimal dose in the effect of morphine on the sympathetic nervous system, that it is possible to withdraw the drug quite rapidly up to that minimum, and that, after this minimal dose is reached the real withdrawal symptoms begin. Rossium, he claims replaces and, in a measure, overcomes the so-called allergic effects of morphine withdrawal, and the patients usually go through their period with great comfort. Occasional diarrhea and occasional vomiting may begin on the first day and go on to the second day and then completely disappear. My own experience with this drug has rather confirmed this. It has not been great. At the Metropolitan Hospital I was furnished with some statistics in which the withdrawal effects of rossium compared very favorably to and were considerably better than the gradual withdrawal of morphine by the replacement of codeine or the method of scopolamine modified by the use of insulin and intravenous dextrose to relieve pain. My own feeling is that the more remedies there are at hand to combat this condition the better is one equipped to handle it.

DR MIECZYSLAW OPENCHOWSKI, Newark, N. J. I collaborated with Dr. Ostromislensky, who first suggested that the withdrawal symptoms in morphine addicts are nothing else than protracted anaphylactic shock. Hence, any chemical compound that will prevent or alleviate the symptoms of anaphylactic shock in animals will prevent or alleviate symptoms of morphine withdrawal. In our research we found in one of the articles written by Matsuda that antipyrine, given intravenously, prevented an anaphylactic shock in sensitized guinea pigs. We found that antipyrine prevented the shock not only by intravenous injections but also when administered subcutaneously and by mouth. Not being satisfied with the present methods of treatment such as gradual withdrawal, codeine, insulin (Sakel and Braun) and scopolamine hydrobromide, we decided to use antipyrine in combination with insulin and then antipyrine alone. Both proved to be quite successful. In the meantime Dr. Ostromislensky introduced a group of compounds, so-called dipyrzolonols, heretofore not applied in therapeutics. One of them, diphenylmethylpyrazolonyl, which has almost the double molecule of antipyrine and a different arrangement of double bonds, proved to be the most active and the least toxic antishock preparation. I had an opportunity to use diphenylmethylpyrazolonyl recently in eighteen cases of morphine, diacetylmorphine and codeine addiction. The very mild symptoms of withdrawal mentioned by Dr. Zabriskie were encountered in my own cases. Insomnia was the outstanding symptom during the so-called postanaphylactic state, which varies in length from six weeks to three months in different individuals. In the light of the anaphylactic theory, it is very easy to understand why some patients twenty years after the withdrawal, when given as little as one ten-thousandth grain of morphine, become addicts, because that quantity will produce enough antigen which, when coming in contact with existing antibodies, produces anaphylactic shock and hence symptoms of withdrawal.

It happens occasionally that patients, years after withdrawal, are given unknowingly to them, morphine in cough mixtures. The relapse in those cases is almost immediate. The period necessary to become an addict varies, as a rule from twelve to twenty days. It also takes that long to sensitize an animal, for instance, a guinea-pig is actively sensitized through horse serum only twelve days after the injection. If more methods will be introduced and used, perhaps some day an ideal method may be found.

DR THEOPHIL KLINGMANN, Ann Arbor, Mich. We have not had any cases that would necessitate cessation of treatment. There have been no apparent harmful effects from the administration of scopolamine and pilocarpine as outlined. We felt always that it is not so much the taking of morphine that is of the greatest importance, but rather the individual. He wants a prop to lean on and finds morphine convenient. As for this new synthetic drug, rossium, we have had no personal experience with it on a patient and I am unable to say much about it as applied clinically. What I have heard recently, however, would more or less confirm an impression I gained, when I went over the data, that the premise on which it is based is more or less unsubstantiated. We have a communication from the American Medical Association Council on Research that concurs with this view.

## INGUINAL GLAND METASTASES IN CARCINOMA OF THE PENIS

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NEW YORK

I have abstracted from the records of the Memorial Hospital 100 cases of carcinoma of the penis. A number of cases have been eliminated because of insufficient history or inadequate follow up.

Sixty-three, or a little less than two thirds of the series, apparently and probably had no lesion beyond the primary penile lesion.

Fifty-five of these sixty-three cases have been symptom free for periods ranging between one and more than ten years following treatment.

Eight patients died of the disease between one and five years.

Nineteen, or 19 per cent, have been well for over five years.

### CASES PRESENTING GROIN METASTASES

Thirty-seven, or a little more than one third of the patients, had groin metastases. These are the cases in which I am mainly interested.

TABLE 1—Cases Presenting No Metastases

| Result              | Years After Treatment |              |              |              |              |               |             |
|---------------------|-----------------------|--------------|--------------|--------------|--------------|---------------|-------------|
|                     | 0-1<br>Years          | 1-2<br>Years | 2-3<br>Years | 3-4<br>Years | 4-5<br>Years | 5-10<br>Years | 10<br>Years |
| Well..              | 9                     | 4            | 5            | 12           | 6            | 16            | 3           |
| Died of the disease | 2                     | 4            | 1            |              | 1            |               |             |

Nine, or 24 per cent of these thirty-seven, were controlled for periods between one and ten years. In none of the nine was radical dissection of the groin done by us. One patient had had a groin dissection at another hospital with recurrence of the cancer in the groin. Four had external irradiation alone two with a 700 kilovolt machine, one by a 200 kilovolt machine and one by a 200 kilovolt machine and a radium pack.

Four had exposure of the glands and radon seed implantation and one had no treatment.

A summary of their histories follows.

CASE 1—There was no specimen from the glands to the groin, but clinical diagnosis of metastatic carcinoma was made. There was no treatment to the groin. The patient was well for one and one-half years. The glands of the groin were apparently stationary, and it is a question whether they were really carcinomatous or not.

TABLE 2—Thirty-Seven Cases Presenting Groin Metastases

|      | Less than 1<br>Year | 1-2<br>Years | 2-3<br>Years | 3-4<br>Years | 4-5<br>Years | 5-10<br>Years | 10<br>Years | ?Years |
|------|---------------------|--------------|--------------|--------------|--------------|---------------|-------------|--------|
| Well | 1                   | 3            | 2            |              | 1            | 1             | 1           |        |
| Died | 15                  | 7            | 4            | 1            |              |               |             | 1      |

CASE 2—The glands of the groin showed carcinoma on aspiration biopsy. Gold radon seeds were implanted into the glands. There was recession of the glands and sclerosis, and the patient was well for two years.

CASE 3—Aspiration biopsy of the glands of the groin was positive for carcinoma. The patient was treated very effectively by the General Electric high voltage machine, with recession of the glands to the groin. He was well between one and two years.

CASE 4—Aspiration biopsy was positive for metastatic carcinoma of the glands of the groin. After treatment by the high voltage General Electric machine there was remarkable recession of the glands. He has been well less than a year.

CASE 5—Pathologic examination of the piece removed from the glands of the groin did not show carcinoma. Clinically the diagnosis was unquestionably carcinoma. Exposure of the glands of the groin was done and gold radon seeds were implanted. Recession and sclerosis took place. The patient was well between four and five years.

CASE 6—There was no pathologic examination of the glands of the groin. Clinically the left inguinal glands were carcinomatous. Adequate dosage was given by both high voltage roentgen therapy and radium pack. There was a recession of these glands, and the patient was well thirteen years.

CASE 7—The penis and inguinal glands were operated on at Bellevue Hospital, it was not certain whether a pathologic examination for carcinoma of the glands had been made although it was so reported to us. When he came to the Memorial Hospital he had enlarged and hard palpable lymph nodes in the right and left inguinal regions. Adequate high voltage roentgen irradiation was given. He was well for more than nine years and then he was lost track of.

CASE 8—The glands of the groin showed squamous carcinoma, grade 2, radioresistant. The right and left groins were exposed and gold radon seeds implanted. The patient lived one year and three months after the operation, when he died of pneumonia. There was no suggestion in the groins of carcinoma.

CASE 9—The glands of the groin showed epidermoid carcinoma, grade 2, radiosensitive. They were implanted with gold radon seeds. At the end of two years the glands show no carcinoma, although at this time there is some question as to whether or not he had abdominal metastases.

The twenty-eight remaining patients all died of carcinoma, although four lived between two and three years and one lived more than three years.

A half of those destined to die do so in the first year, fifteen out of twenty-eight. The statistics of both the living and the dead are of interest.

### PATHOLOGIC EXAMINATION

In twenty-two of the cases there was no pathologic examination, while a positive diagnosis of carcinoma was made in fourteen cases.

In five of the fourteen cases the positive diagnosis of carcinoma was made by the aspiration method.

Five of the nine controlled cases presented a positive pathologic diagnosis of cancer of the groin glands. In three no diagnosis was made and in one it was questionable.

Only two patients, a little over 5 per cent, have lived symptom free for more than five years. In neither of these cases was there a positive pathologic diagnosis of cancer, but the clinical diagnosis was tolerably sure. Five years ago aspiration biopsies were not being made.

#### DEVELOPMENT OF INGUINAL METASTASES WHILE UNDER OBSERVATION

In four cases the metastases developed after the patient had come for treatment.

CASE 10—The glands of the groin developed after the patient came to the hospital and while he was under observation. No specimens were obtained. The glands were treated but the patient died in two years of this disease.

CASE 11—Six months after the patient was first seen the glands of the groin had become enlarged and aspiration biopsy at this time showed solid carcinoma of the glands. The glands of the groin were dissected out surgically. The patient died one year later from metastases. An autopsy showed metastases to the lymph nodes, peritoneum, pleural cavity, liver, kidneys, prostate, seminal vesicles, testis and lungs. The pathologic diagnosis from specimens taken from the penis showed squamous carcinoma, grade 2, radioresistant.

CASE 12—A primary lesion of the penis was treated with gold seeds. The patient did not report back to the hospital for six months after this, when he came with a very large carcinoma of the glands of the groin, too advanced for any therapy. At the time the penile lesion was being treated there was a groin gland which ought to have been suspected. He lived for two years after he was first seen, dying of carcinoma.

CASE 13—The glands of the groins were apparently free of carcinoma when the patient came to the hospital. They became enlarged, and on aspiration biopsy a diagnosis of carcinoma was made. Notwithstanding this, the groins were exposed and radon seeds implanted. He died two years later from hemorrhage from the deep vessels in the groin.

This is a condition which certainly should be avoided and, while it is to a certain extent a criticism of the observer, it also emphasizes the subtle way with which metastases develop. This occurrence has led to the more extensive use of the aspiration biopsy, which should always be done if the glands are at all questionable.

#### METASTATIC GLANDS WITH INFECTION

Ten out of the thirty-seven cases that presented glandular metastases showed infection of the carcinomatous glands. This resulted in the breaking down of the carcinoma into a sloughy ulcerated mass and eventual death of the patient. No known treatment can cope with this situation.

Six of the patients came into the hospital with infected broken down glands and four developed them while in the hospital. It is the last four that should have been given our particular attention.

Elimination of the primary infected carcinoma of the penis should be rapidly done. This is generally by means of a clean cut operation, usually partial amputation of the penis 1 cm beyond the carcinoma.

One of the aforementioned cases developed after the attempted control of the penis lesion by the implantation of gold seeds. This procedure is, I believe, contraindicated because it is apt to increase rather than diminish the infection.

#### DEATH OF HEMORRHAGE

Two patients died of hemorrhage from excavation by the carcinoma of the femoral vessels.

In one of these cases the glands of the groin were apparently free of carcinoma when the patient came to the hospital, then they developed carcinoma. Aspiration of the glands failed to reveal carcinoma and yet they were carcinomatous. The groins were exposed and radon seeds implanted. The patient died two years later from hemorrhage of the groin.

These two patients who died of hemorrhage probably died because the carcinoma directly invaded the femoral vessel. On the other hand, in the case cited a radon seed may have been planted too near one of the vessels, causing slough and hemorrhage. I doubt that this occurred, because the slough caused by radon seeds is very limited in extent. It simply emphasizes the fact that great care should be used in implanting radon seeds near a vessel. I know, however, of no better method to control a carcinomatous gland on or near a vessel than by means of implanting such seeds.

#### OPERATIVE DEATHS

One patient died from the operation of removal of the penis with extensive resection of the inguinal glands. This death was primarily due to infection of the area, which emphasizes that the operation on the inguinal glands and penis cannot be done with impunity and is a point in favor of the control by irradiation rather than by operation.

#### UNUSUAL CASES

In one patient who had metastatic inguinal glands removed by operation an unrelated carcinoma of the bladder developed nine months later from which he died. Another patient came to the hospital with an enormous inguinal gland tumor from which a section was taken and the diagnosis made of "epithelial tumor metastases." After much search a primary lesion of the penis was discovered 1 cm in diameter.

#### PATHOLOGIC ANATOMY

When cancer of the penis metastasizes, it does so through a remarkably rich lymphatic chain. These vessels lead to the superficial and deep lymph nodes of the inguinal region. When metastasis takes place, a nest of cells breaks off from the primary lesion and enters one of the lymph vessels in the form of an embolus and travels along that vessel until it reaches a lymph gland, where it is stopped. It probably never stops in the course of the lymph vessel. The lymph gland is the first obstructing strainer. When the primary source of the cancer in the penis is removed it is manifestly impossible for any more cancer cells to come from it and enter the lymphatics. If the primary source still contains cancer cells and if the inguinal lymph glands have been dissected out, such cell emboli enter the lymphatics and progress through these, stop at the cut end of the wound in the groin and there grow wild and unencapsulated. If the cells are caught in a lymph gland, the problem is how best to control them. Lwing has shown how slight trauma may dislodge some of the millions of cancer cells of a lymph node. The rare cures by operative removal of the inguinal nodes must clearly indicate that cancer cells are set loose by this removal and the implants grow in situ. While this is a much discussed and now somewhat old theory, it is the only logical theory of the curative failure of operative removal of the affected lymph nodes. This is of course the basis of control by nonoperative and nontraumatic methods.



## THE LITERATURE

One rarely finds the report of a case in which dissection of cancerous glands of the groin, demonstrated by pathologic examination, has resulted in a five year cure. Yet the operation has been done countless times and for years by competent surgeons.

Young<sup>1</sup> reports thirty-four cases in which his radical operation was done. In twenty-four of his cases (61 per cent) the glands were free of cancer and in thirteen cancer was shown pathologically. Nine patients (23 per cent) lived more than five years symptom free. Eight of these five year cases showed no cancer in the glands and in one lone case the glands were carcinomatous. Three of the thirty-four patients, or 8 per cent, died of the operation.

RELATION BETWEEN CARCINOMA OF THE PENIS  
AND CARCINOMA OF THE VULVA

Carcinoma of the penis and carcinoma of the vulva have been compared and discussed because of the points of similarity between the two lesions and because of the fact that one surgeon, Taussig of St. Louis, presents startlingly good operative results in carcinoma of the vulva.

Lesions both of the vulva and of the penis are in a large percentage of cases squamous carcinoma. Both are usually radioresistant tumors of so-called low malignancy, although Lewis from Young's clinic believes that eight out of thirteen cases, because of their rapid growth, were of high malignancy.

They both invade secondarily the inguinal glands. Here the points of similarity end.

The primary lesion in the male is probably much more often severely and deeply infected than is the vulva carcinoma. Growth under an infected and non-retractable foreskin is the cause of this. Little mention is made by gynecologists about infection. Ten out of thirty-seven of our cases that presented glandular metastases showed severe infection of the metastatic glands.

The inguinal glands in the female are often surrounded by much fatty tissue and are for that reason possibly less exposed to trauma both from muscular action and from blows.

My statistics show that penis cancer when first seen has metastasized to the inguinal glands in but one third of the cases. Taussig<sup>2</sup> reports twenty-two glandular metastases out of thirty-three cases, double the frequency of penis cancer.

Finally come Taussig's operative statistics. "Out of nineteen Bassett operations done over five years ago cancer was found present in the lymph glands thirteen times and yet in six of these there was no recurrence (postoperative) during the five year period." In other words, he cured by radical dissection nearly 50 per cent of the cases that showed positive glandular cancer.

In analyzing Taussig's work the only difference in his dissection and that advocated by Young and others is that he does the Bassett operation, exposing the round ligament as in a hernia operation and dissecting out the glandular tissue and a lymphatic gland found there. I do not know of such a gland in the inguinal canal in the male, nor have I heard one described.

The only conclusion that can be drawn from the comparison between carcinomas of the vulva and of

the penis is that there must be considerable difference in the pathologic anatomy of cancer of the vulva and cancer of the penis and that the possibility of operative cure in the former is greater.

## SUMMARY

Both surgery and irradiation have to date proved quite impotent in dealing with inguinal metastases from penis carcinoma. Surgery has probably been very well done and irradiation probably has been inadequate as to dosage and proper application. Surgical removal has a definite mortality, irradiation had none.

Early surgical removal of the lesion of the penis 1 cm beyond the growth is the first step.

Early aspiration biopsy of the inguinal glands is imperative.

If the glands are cancerous, a combination of external irradiation and radon implanted seeds through an incision and under vision would seem to offer the greatest hope of cure. Either one of these alone would seem to be ineffective for this type of growth.

Primary external irradiation by the Coutard method followed immediately by operative removal before skin changes have taken place may offer another lead toward cure.

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## ABSTRACT OF DISCUSSION

DR. GEORGE E. PFAHLER, Philadelphia. I would emphasize the importance of learning the technic of the needle biopsy. Likewise, I think that radiologists must develop a sympathetic cooperation on the part of the pathologists because they much prefer looking at a fixed section. I should like to ask Dr. Barringer whether it would not be practical, logical and proper, after having done a needle biopsy and the specimen obtained is found to be negative to do a surgical biopsy, because, if one has a right to assume that a gland is probably not malignant as studied by the needle biopsy, there could be no serious harm in taking out this gland surgically and studying it properly. That would give more accurate information and still not cause a great deal of trauma, and there would be a minimum of risk of dissemination. I would urge that, before doing biopsies in these suspected or nonmalignant cases, preliminary irradiation be given. Theoretically, it must be assumed that irradiation, not less than 100 per cent, will devitalize the cells so that there will be less danger of dissemination. Along the line of treatment, I have had the impression that I have obtained better results from radium packs than from x-rays. If x-rays are used, one should use high voltage and highly filtered radiation and count on giving a total of somewhere between six or ten erythema doses. I think that failure in irradiation usually results from insufficient treatment but when large doses of that character are given, every possible precaution must be taken to protect the normal tissues and areas of treatment be confined to the likely location of the disease.

DR. BENJAMIN S. BARRINGER, New York. At Memorial Hospital we have had a good deal of discussion among members of the staff, those of the urologic and gynecologic departments particularly as to precisely what the possibility is of curing or not curing patients who have glandular metastases. The answer was that we were not curing many. This is a frank explanation of the situation as it is today. I think it has taught me to dig out the facts of what is not being done in this condition. As to Dr. Pfahler's biopsy, I think it is much easier for the performer of the biopsy than for the pathologist to make the diagnosis. If enough tissue or enough cells are obtained to make a good smear, one can make a reasonable diagnosis in about 80 per cent of the cases, particularly in prostate conditions. In carcinoma of the inguinal glands one may not get the right gland, but I think 80 per cent is fair as to the possibility of getting the biopsy and making the diagnosis. It is interesting that especially designed needles are not necessary.

<sup>1</sup> Young, H. H. J. Urol. 26: 285 (Aug.) 1931.  
<sup>2</sup> Taussig, F. J. Surg., Gynec. & Obst. 60: 477 (Feb.) 1935.

Almost any kind of needle, 18 or 20 gage, can be used. I have used a spinal needle or anything that was at hand. I think it is possible, as Dr Pfahler suggests, to take a surgical biopsy if the aspiration biopsy fails. As to the irradiation before doing anything, I would rather make the diagnosis and decide what glands were carcinomatous and then, with a free heart, give the irradiation which past experience has told is enough to control the cancer. I am quite sure that external irradiation alone is not enough.

DR. G. E. PFAHLER, Philadelphia. Given an enlarged gland in connection with carcinoma of the penis, in which one has done needle biopsy which is found negative and in which one finally concludes that the involved glands are inflammatory, don't you think it still would be advisable to use moderate irradiation on account of the inflammatory gland? Isn't it true that inflammatory glands, according to Dr Ewing, pave the way for malignant infection?

DR. BENJAMIN S. BARRINGER, New York. No, I don't believe that. I don't think that the inflammatory part has any relation to the malignant state. I think that inflammation plus a malignant condition make a hopeless situation. No surgeon can deal with it and no radiologist. The patient is done when infection sets in. I would get rid of the lesion of the penis and wait for the infection to die down. As far as the radio pack versus high voltage roentgen therapy is concerned, I don't think any one knows their relative value. I have tried and a good many others have tried to compare the two.

## ESSENTIAL FRUCTOSURIA

ALEXANDER MARBLE, M.D.

AND

RACHEL M. SMITH, A.B.

BOSTON

Following the publication in September 1934 by Silver and Reimer<sup>1</sup> of studies on six cases of essential fructosuria, at Dr Joslin's suggestion we set about to ascertain whether or not we had been overlooking such cases in our patients with nondiabetic melituria. Earlier careful studies of the records and in certain instances special studies of the blood and urine of some 1,400 such patients had led to the reporting in 1932 of twenty-two cases of renal glycosuria possessing a very low renal threshold<sup>2</sup> and three cases of chronic essential pentosuria<sup>3</sup>. At that time, although Seliwanoff's test was carried out in each of the cases reported, no instance of fructosuria was disclosed.

Our procedure in the recent study has been as follows. On urine specimens found by the routine Benedict test to contain sugar, the test was repeated, but instead of the mixture of Benedict's solution and urine being heated it was allowed to stand at room temperature over night. In common with other ketosugars, as ketopentose, fructose (levulose) reduces copper solutions in the cold<sup>4</sup>. Urines giving positive tests were then tested by use of the Seliwanoff reaction with the modification employed by Silver and Reimer.

By means of this method it so happened that, in the first 136 consecutive specimens of urine containing sugar, one case of fructosuria was discovered. This case forms the subject of the present report. Since then, despite the fact that a total of more than 3,000

specimens containing sugar have been examined in this special way, no other instance of fructosuria has come to light except in the case of Miss B. K., a Jewish high school student, aged 17 years, who exhibits slight fructosuria in connection with mild diabetes. Her case will be described in more detail later in the paper.

Essential fructosuria, then, is rare. Indeed, according to the statement of Silver and Reimer, the case described here is the thirty-first to be reported in the literature. Except for the six cases of Silver and Reimer and the one case reported by Strouse and Friedman<sup>5</sup> in 1912, there are no other published accounts in the American literature.

S. F., a man, aged 20, a Jewish college student, came first for diagnosis and treatment Nov. 16, 1934. Sugar had been found in his urine for the first time in April 1932 at an examination for insurance. Several times after the initial discovery, specimens of urine had shown a positive test for sugar. Two blood sugar tests had given normal values. There had been no symptoms typical of diabetes. There was no history of glycosuria, diabetic or otherwise, in relatives. His past history was irrelevant.

The patient was tall, thin and healthy appearing. With clothing his weight was 159 pounds (72 Kg.) and his height 6 feet  $\frac{1}{4}$  inch (185 cm.) with shoes. Examination of the heart, lungs, abdomen and reflexes gave normal results and the blood pressure was 122 systolic and 74 diastolic.

Laboratory studies revealed a blood sugar of 0.07 Gm per hundred cubic centimeters one hour after a breakfast consisting of two slices of toast with coffee containing cream and sugar. A urine specimen passed at the time of collection of the blood contained 0.5 per cent sugar but no diacetic acid. Other observations as regards the urine were as follows: acid reaction, specific gravity 1.028, slight trace of albumin, no bile, and in the sediment no red blood corpuscles or casts and only a rare white blood corpuscle. Subsequent urinalyses showed only a slight trace of albumin and no abnormalities in the sediment. The routine blood Hinton test (for syphilis) was negative.

The urinary sugar was found to disappear entirely after fermentation with bakers' yeast. The Bial test for pentose was negative. Reduction of Benedict's solution did occur, however, without heating when the tube was allowed to stand over night at room temperature. Seliwanoff's test was markedly positive.

These studies suggested strongly that the patient had chronic essential fructosuria. Various confirmatory tests were done, however.

**1 Dextrose Tolerance Test**—One hundred grams of dextrose was given by mouth after an overnight fast, with the results indicated in table 1. This test demonstrated beyond all doubt that the patient could metabolize dextrose normally.

TABLE 1—Dextrose Tolerance Test

| Time                         | Urine            |       | Blood Sugar<br>Gm. per 100 Cc. |                     |
|------------------------------|------------------|-------|--------------------------------|---------------------|
|                              | Specific Gravity | Sugar | Capillary <sup>a</sup>         | Venous <sup>1</sup> |
| Fasting                      | 1.024            | 0     | 0.08                           | 0.07                |
| 100 Gm. of dextrose by mouth |                  |       |                                |                     |
| 30 minutes after dextrose    | 1.022            | 0     | 0.15                           | 0.12                |
| 60 minutes after dextrose    | 1.006            | 0     | 0.14                           | 0.12                |
| 120 minutes after dextrose   | 1.007            | 0     | 0.11                           | 0.11                |

**2 Fructose Tolerance Test**—Forty grams of fructose was given by mouth to the patient and to a normal control (33 year old healthy male physician, weighing 146 pounds [66 Kg.] without clothing). Both were in the postabsorptive state. The results are shown in table 2.

This work was aided by a grant from the Chemical Foundation. From the Department of Medicine, Harvard Medical School and the George F. Baker Clinic, Elliott P. Joslin, M.D., Medical Director, New England Deaconess Hospital.

<sup>1</sup> Silver, Solomon and Reimer. *Essential Fructosuria*. *Arch. Int. Med.* 54: 412 (Sept.) 1934.

<sup>2</sup> Marble, Alexander. *Renal Glycosuria*. *Am. J. M. Sc.* 183: 811 (June) 1932.

<sup>3</sup> Marble, Alexander. *Chronic Essential Pentosuria*. *Am. J. M. Sc.* 183: 827 (June) 1932.

<sup>4</sup> Lasker, Margaret and Enklewitz, Morris. *A Simple Method for the Detection and Estimation of Lxylketose in Urine*. *J. Biol. Chem.* 101: 289 (June) 1933.

<sup>5</sup> Strouse, Solomon and Friedman, J. C. *Levulosuria with a Report of an Unusual Case*. *Arch. Int. Med.* 9: 99 (Jan.) 1912.

<sup>6</sup> Folin, Otto and Malmros, H. *An Improved Form of Folin's Micro Method for Blood Sugar Determinations*. *J. Biol. Chem.* 83: 115 (July) 1929.

<sup>7</sup> Folin, Otto and Wu, Helen. *A System of Blood Analysis Supplement I: A Simplified and Improved Method for Determination of Sugar*. *J. Biol. Chem.* 41: 367 (March) 1920. Folin, Otto. *The Determination of Sugar in Blood and in Normal Urine*. *ibid.* 67: 357 (Feb.) 1926.

Several interesting facts were brought out by this tolerance test

(a) **Urinary Sugar** The difference between the response in the normal individual and the fructosuric patient as regards the excretion of fructose in the urine was striking. The normal person excreted only traces of sugar and that only in the specimens voided at one and two hours after the giving of 40 Gm of fructose. In the individual with fructosuria, a total of 55 Gm. of sugar (the calculations being based on the percentage of sugar as determined by the method for fructose) was excreted in the three hours. This represents approximately 14 per cent of the fructose ingested, a figure which corresponds closely to that found by Silver and Reiner.

(b) **Total Blood Sugar** Both curves were normal in type, although the curve of the fructosuric patient rose slightly more than that of the normal.

(c) **Fructose in Blood** The rise in blood fructose in the control test was slight, reaching a maximum concentration of 11 mg per hundred cubic centimeters at one hour after the fructose was given. In the patient there was much delay in

4 **Preparation of Osazone**—According to the method suggested by Neuberg and Strauss<sup>11</sup> the methyl-phenyl fructosazone was prepared from the patient's urine. The crystals obtained had the color and microscopic appearance of methyl-phenyl fructosazone and melted at 152.5 C.

#### COMMENT

Our results as well as those of Silver and Reiner suggest that the renal threshold for fructose is very low. In our normal control, fructose appeared in the urine at a time when the blood fructose was but 11 mg per hundred cubic centimeters. The metabolic error in the patient with fructosuria is reflected in the retarded rate at which fructose is removed from the blood stream by the tissues. As a consequence, a blood fructose level well above the kidney threshold is temporarily maintained with consequent fructosuria. Presumably the removal of fructose from the blood is

TABLE 2—Fructose Tolerance Test

| Time                       | Normal Control    |                                  |                                   |   |  |                                 | Patient with Fructosuria |                                  |                                   |   |  |                                 |
|----------------------------|-------------------|----------------------------------|-----------------------------------|---|--|---------------------------------|--------------------------|----------------------------------|-----------------------------------|---|--|---------------------------------|
|                            | Urine             |                                  |                                   | Blood   |  |                                 | Urine                    |                                  |                                   | Blood   |  |                                 |
|                            | Sugar             |                                  |                                   | Dextrose  |  |                                 | Sugar                    |                                  |                                   | Dextrose  |  |                                 |
|                            | Vol<br>ume<br>Cc. | Benedict's<br>Method<br>per Cent | Fructose <sup>a</sup><br>per Cent | Total <sup>b</sup><br>Sugar,<br>Mg per<br>100 Cc. | Fruc<br>tose <sup>a</sup><br>Mg per<br>100 Cc. | Difference<br>Mg per<br>100 Cc. | Vol<br>ume<br>Cc.        | Benedict's<br>Method<br>per Cent | Fructose <sup>a</sup><br>per Cent | Total <sup>b</sup><br>Sugar,<br>Mg per<br>100 Cc. | Fruc<br>tose <sup>a</sup><br>Mg per<br>100 Cc. | Difference<br>Mg per<br>100 Cc. |
|                            | 45                | 0                                | 0                                 | 86  | 0  | 86                              | 38                       | 0                                | 0                                 | 88  | 0  | 88                              |
| Fasting                    |                   |                                  |                                   |   |  |                                 |                          |                                  |                                   |   |  |                                 |
|                            |                   |                                  | 40 Gm of fructose by mouth        |   |  |                                 |                          |                                  |                                   |   | 40 Gm of fructose by mouth                     |                                 |
| 30 minutes after fructose  | 45                | 0                                | 0                                 | 92  | 7  | 85                              | 24                       | 2.6                              | 2.4                               | 108   | 27   | 81                              |
| 60 minutes after fructose  | 24                | 0.10                             | 0.10                              | 93  | 11   | 82                              | 23                       | 0.9                              | 6.4                               | 114   | 45   | 69                              |
| 120 minutes after fructose | 53                | 81 trace                         | 0.08                              | 85  | 4  | 81                              | 53                       | 4.8                              | 4.2                               | 110   | 24   | 76                              |
| 180 minutes after fructose | 105               | 0                                | 0                                 | 81  | 0  | 81                              | 48                       | 2.5                              | 2.0                               | 92  | 16   | 76                              |

the removal of fructose from the blood stream, so that the blood sample collected one hour after the ingestion of fructose contained 45 mg of fructose per hundred cubic centimeters. Even at the three hour collection, the blood fructose was 16 mg per hundred cubic centimeters, a value 50 per cent higher than the maximum value in the case of the normal control. The values for blood fructose in the various samples corresponded in magnitude to the amount of the sugar excreted in the urine.

TABLE 3—Percentages with the Saccharimeter and by Titration

|          | Saccharimeter,<br>per Cent | Titration<br>per Cent |
|----------|----------------------------|-----------------------|
| Sample A | 2.40                       | 2.97                  |
| Sample B | 1.41                       | 1.50                  |

(d) **Dextrose in Blood** If one calculates the amount of dextrose in the blood by subtraction of the values for fructose from those for total sugar, one makes the surprising finding that the fructose displaced dextrose and that following the ingestion of fructose the dextrose content of the blood actually became less. This was, of course, more striking in the case of the fructosuric patient. Similar observations were reported by Silver and Reiner. Furthermore they found that, when 30 units of insulin was given subcutaneously at the same time that 50 Gm of fructose was administered orally, the dextrose content of the blood approached zero but the fructose content of the blood prevented the symptoms of hypoglycemia.

3 **Polarization**—Examination of the urine in the saccharimeter showed levorotation. The percentage obtained with the saccharimeter was compared with that by titration (Folin-McEllroy method<sup>10</sup>) with the results given in table 3.

8 Smith M. A Micro Modification of the Method of Benedict for the Quantitative Determination of Reducing Sugar in Urine. *J Lab & Clin Med* 7:364 (March) 1922.

9 Roe J. H. A Colorimetric Method for the Determination of Fructose in Blood and Urine. *J Biol Chem*, 107:15 (Oct) 1934.

10 Folin Otto and McEllroy W. S. Copper Phosphate Mixtures as Sugar Reagents: A Qualitative Test and a Quantitative Titration Method for Sugar in Urine. *J Biol Chem* 33:513 1918. Folin Otto, and Peck E. C. A Revision of the Copper Phosphate Method for the Titration of Sugar. *ibid.* 35:287 (June) 1919.

cared for largely by the liver,<sup>12</sup> in which organ the sugar is stored as glycogen, in the fructosuric individual, for some unknown reason, the liver to a greater or less degree fails in the performance of this normal function. As in our patient, there may be no other signs of hepatic dysfunction.

Essential fructosuria is apparently a harmless disorder. There are no reports in the literature which indicate that it may develop into diabetes mellitus. In treatment it would seem reasonable to avoid excesses of cane sugar, honey and fruit although there is little or no evidence to indicate that the excretion of small quantities of fructose in the urine is of any more significance or harm than the excretion of dextrose in renal glycosuria or of pentose in essential pentosuria.

The occurrence of fructose in the urine of patients with severe diabetes is said to occur not infrequently,<sup>13</sup> although in 1922 Greenwald<sup>14</sup> stated that, "if the voluminous literature on the subject of the occurrence of fructose in diabetic urines be reviewed, it will be found that few reports will stand critical examination." Our experience in this regard is that urine specimens containing large amounts (i. e., 5 per cent or more) of sugar may show an appreciable reduction of Benedict's solution in the cold and occasionally may even give a

11 Neuberg C and Strauss H. Ueber Vorkommen und Nachweis von Fruchtzucker in den menschlichen Körpersäften, *Ztschr f physiol Chem* 36:1227 (Sept. 6) 1902.

12 Peters J. P. and Van Slyke D. D. Quantitative Clinical Chemistry. Baltimore: Williams & Wilkins Company 1:62 1931. Sachs, H. Ueber die Bedeutung der Leber für die Verwertung der verschiedenen Zuckerarten im Organismus. *Ztschr f klin Med* 38:87 1899. Mann F. C. The Effects of Complete and of Partial Removal of the Liver. *Medicine* 6:442 (Dec.) 1927. Jacobson C. A Study of the Carbohydrate Tolerance in Eck Fistula and Hypophysectomized Animals (Posterior Lobe Removal). *Am J Physiol* 52:233 (June) 1920.

13 Neuberg C. in Metabolism and Practical Medicine by C. von Noorden. Chicago, W. T. Keener & Co 1907 vol 3 chapter IV.

14 Greenwald Irving. Disturbances of Carbohydrate Metabolism Other Than in Diabetes Mellitus. *Endocrinology and Metabolism* New York, D. Appleton & Co 4:298 1922.



slightly positive Selwanoff's reaction. The response in the latter instance, however, does not approach the intensity that we have observed in our case of essential fructosuria and in our previously mentioned diabetic patient who exhibits definite fructosuria. We have not attempted to determine whether or not such slightly positive tests are really due to small amounts of fructose accompanying dextrose.

The condition of Miss B. K. deserves further discussion. With her the diagnosis of diabetes has seemed justifiable despite the absence of characteristic symptoms. There is said to be a pronounced family history of melituria among paternal relatives, although definite evidence is not at hand as to whether this is truly diabetic. Sugar was found in the patient's urine first in April 1931, although in July 1935 none was found in three twenty-four hour samples while the patient was taking a diet which on one day included as much as carbohydrate 159, protein 64 and fat 81 Gm. Two sugar tolerance tests with 75 Gm of sucrose, one on Dec 27, 1933, and the other on Dec 27, 1934, gave curves typical of mild diabetes with increases in blood sugar values (venous) to 0.23 and 0.26 Gm per hundred cubic centimeters, respectively, and in each instance a

TABLE 4—*Fructose Tolerance Test*  
Miss B. K., July 17, 1935

| Time                       | Urine        |   |    | Blood                              |                                   |   |
|----------------------------|--------------|---|----|------------------------------------|-----------------------------------|---|
|                            | Volume<br>Cc | Sugar<br>(Benedict's<br>Method)<br>Per Cent | Gm | Total<br>Sugar<br>Mg per<br>100 Cc | Fruc-<br>tose<br>Mg per<br>100 Cc | Dex-<br>trose by<br>Differ-<br>ence<br>Mg per<br>100 Cc |
| Fasting                    | 150          | 0   | 0  | 80                                 | 0                                 | 80  |
| 40 Gm of fructose by mouth |              |   |    |                                    |                                   |   |
| 30 minutes after fructose  |              |   |    | 110                                | 23                                | 87  |
| 70 minutes after fructose  | 80           | 0.5   | 4  | 134                                | 35                                | 99  |
| 130 minutes after fructose | 180          | Trace                                       |    | 93                                 | 18                                | 75  |
| 190 minutes after fructose | 700          | 0   | 0  | 85                                 | 0                                 | 85  |

value of 0.12 Gm per hundred cubic centimeters at the end of two hours. When, however, on July 17, 1935, after an overnight fast, 40 Gm of fructose was given by mouth to this patient and samples of blood and urine taken at intervals thereafter, the results shown in table 4 were obtained.

It is evident that the blood fructose rose to an abnormally high level and that coincident with this a small amount of sugar was excreted in the urine. The total blood sugar rose relatively little and the curve obtained was well within normal limits, in itself not supporting the diagnosis of diabetes.

Such a finding agrees, however, with the results of Abe,<sup>15</sup> who noted that in dogs with mild though definite diabetes the ingestion of fructose did not cause an abnormal increase in blood sugar. For example, his dog M exhibited an almost flat tolerance curve after 2 Gm of fructose per kilogram of body weight orally with no capillary blood sugar above 0.122 Gm per hundred cubic centimeters (twenty minutes after the giving of sugar). In the same animal a similar amount of dextrose produced a typical diabetic curve with capillary blood sugar as high as 0.320 Gm per hundred cubic centimeters (seventy-five minutes after the giving of the sugar). With diabetes of more severe grade, fructose also causes marked hyperglycemia.

Continued observation of our patient and further studies of carbohydrate tolerance are planned.

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<sup>15</sup> Abe Minoru. The Availability of Fructose in the Body of Normal and Diabetic Subjects. *J. Biochem.* 19: 69 (Jan.) 1934.

## THE CORRELATION OF PSYCHIC AND SOMATIC DISORDERS

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The trend of progress in the medical sciences during the past century has been toward the interpretation of illness in terms of tissue change. The conditions revealed by physical diagnosis, the etiologic agents disclosed by bacteriology and pathology, and the illuminating diagnostic contributions of the x-rays have added immeasurably to a more logical concept of sickness. This knowledge, made use of by medicine and even more brilliantly by surgery, has helped mankind through the many cures that have been accomplished.

However, such progress has not been without regrettable losses. This emphasis on local tissue change, derided by Kennedy<sup>1</sup> as representative of the materialism and dogma of the cellular epoch of pathology, quite obviously resulted in a neglect of those patients who failed to show "organic pathology." Often they were dismissed with the derogatory designation of "neurotic."

In the past three decades there has awakened a significant interest in neuroses. Freud, at first following the philosophy of Schopenhauer and the psychology of Charcot, branched off into new trails through the unconscious to offer a coherent interpretation of neurotic illness and mechanisms. Freud and his followers of the psychoanalytic school have stressed the role of mental processes, particularly unconscious mechanisms, in causing illness.

Thus, in the recent past "functional" and "organic" have been looked on as opposites. Medical thinking has placed "psychic and somatic," "mental and morphologic," "functional and organic" at opposite poles. These concepts have been considered mutually exclusive.

Such an attitude has proved not only harmful to patients but a detriment to doctors themselves. More recently there has grown a favorable tendency to reintegrate. The addition to medical knowledge by physiologists, neurosurgeons, endocrinologists and psychiatrists has been responsible for the newer trend toward thinking of the patient as a whole.

From this rich literature I have borrowed here and there to illustrate my theme, which is the correlation of psychic and somatic disorders.

### THE DIENCEPHALON AND THE AUTONOMIC NERVOUS SYSTEM

The diencephalon is that region at the base of the brain which surrounds the third ventricle. It extends from the optic chiasm anteriorly to the pineal gland posteriorly and from the thalamus above to the tuber cinereum and the corpora mamillaria below. The detailed histologic structures and the many fiber connections of the diencephalon are portrayed and described in many recent articles. Especially valuable are Jelliffe's<sup>2</sup> "Diencephalic Vegetative Mechanisms" and Kuntz's<sup>3</sup> monograph on the "Autonomic Nervous System." The reader is referred to these and other texts for further details (fig. 1).

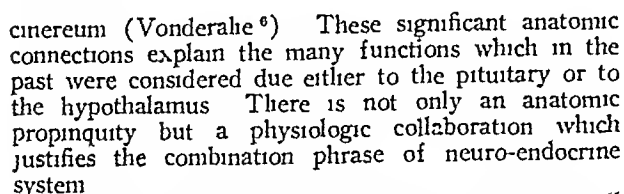
From the neuropsychiatric service Lakeside Hospital. Read before the Medical Section of the Academy of Medicine Cleveland May 9, 1935.

<sup>1</sup> Kennedy Foster in discussion on Harrington Milton. *The Mechanistic Approach to the Problem of Mental Disorder*, Arch. Neurol. & Psychiat. 32: 892 (Oct.) 1934.

<sup>2</sup> Jelliffe S. E. Diencephalic Vegetative Mechanism. Arch. Neurol. & Psychiat. 21: 838 (April) 1929.

<sup>3</sup> Kuntz Albert. The Autonomic Nervous System. Philadelphia Lea & Febiger 1934.

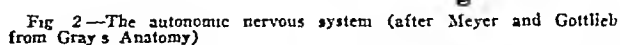
Its physiologic importance may be inferred from numerous recent experiments, only a few of which I shall mention. Bard<sup>10</sup> sectioned the nervous system of cats at various levels and found that the rage reaction continued to occur until a small triangular segment just posterior to the stalk of the pituitary was excluded. When this small segment was removed, the rage reaction no longer occurred. Grinker<sup>11</sup> reported most interesting observations made by Foerster in operating in this region with patients under local anesthesia. Maniacal attacks have been provoked in which flight of ideas, incoherence and disorientation were present. Sleepiness has also been produced. The conclusion from these experiments was that the area on the anterior inferior part of the third ventricle is a region of excitation, while the posterior superior part of the third ventricle and aqueduct of Sylvius is a region that calms and quiets, causing fatigue, stupor, slowing of thinking, and dimming of consciousness.



The diencephalon is connected with the cortex as well as with the midbrain, pons and spinal cord. It contains the centers for the autonomic outflow. As Jelliffe and White<sup>7</sup> remarked, "This sympathetic and parasympathetic outflow has its switchboard synapses in the inter- and midbrain" (fig. 2).

This vegetative nervous system is composed of two sets of nerves, sympathetic and parasympathetic, both of which innervate all viscera. These two nerve pathways appear to check each other—the vagus catabolic, the sympathetic anabolic, the vagus slowing, the sympathetic speeding certain functions. Out of this difference has grown the clinical concept of two distinct physiologic types—the vagotonic and the sympathicotonic.

The function of the diencephalon is most vital. It is the center through which emotions are "physiologized." Embryologically, it is one of the oldest parts of the brain. Müller<sup>8</sup> describes the central gray matter surrounding the third ventricle as "the seat of elementary, vital and vegetative functions of life." On both sides of the third ventricle lies the optic thalamus, the old important center of the whole sensibility, in the medulla lie the centers of respiration and circulation. Comparative anatomic studies have demonstrated the phylogenetic antiquity of the hypothalamus and its consequent importance. Jelliffe and White refer to this region and to the vegetative nerves as "the primitive archaic portion of the ganglionic or metameric system of lower vertebrates." Dart<sup>9</sup> says that the widespread sympathetic



Ranson, experimenting with cats, found that stimulation of the hypothalamus resulted in an increase in the rate and depth of respiration, a rise in blood pressure, inhibition of the gastro-intestinal peristalsis, and dilatation of the pupils. Davis demonstrated experimentally that lesions of the hypothalamus markedly influenced

11 Grinker R. R. Neurology, Springfield Ill Charles C Thomas  
1934

carbohydrate metabolism Davison<sup>12</sup> reported a clinical case and the pathologic specimen of a patient who died of a localized tumor in this region. The outstanding symptom was hypothermia, the temperature ranging between 90 and 96 F. Such data offer physiologic support for Dresel's<sup>13</sup> graphic metaphor in which he likens the diencephalon to a thermostat.

Recent work coming from Fulton's laboratory, reported by Watts and Fulton,<sup>14</sup> shows that lesions in the hypothalamus exert a marked influence on the gastro-intestinal tract and the heart. In such hypothalamic lesions there resulted anorexia, together with erosions of the mucous membranes. These experimental data are in line with Cushing's<sup>15</sup> earlier clinical report of the coexistence of ulcers in the gastro-intestinal tract with intracranial lesions. Grant<sup>16</sup> has added several cases to Cushing's larger series.

Before passing on to the neuroses, I will briefly summarize the experimental and clinical data mentioned. The diencephalon is the center for vital vegetative functions. It is apparently the emotional center from which impulses reach the viscera by the vagal and sympathetic pathways.

#### THE CORRELATIONS OF PSYCHIC AND SOMATIC DISORDERS

The foregoing anatomic and physiologic data, sketched all too briefly, may serve as a basis for the understanding of certain relations between the psyche and the soma.

The relations between psychic and somatic disorders are numerous but may be subdivided into three main groups. (1) Organic disorders may produce neurotic-like symptoms, that is, may appear as "psychic" or "functional" states, (2) organic and functional disorders may coexist independently, (3) psychic disturbances may induce physiologic and even physical disorders.

#### ORGANIC DISEASE CAUSING NEUROTIC-LIKE SYMPTOMS

It is an experience common to most medical men that certain patients considered "neurotic" finally show organic disease as the cause of their symptoms. The word "finally" may apply to the postmortem status or to the diagnostic acumen of the next examiner. Neuropsychiatrists not infrequently are consulted by patients whose complaints have the ring of neurotic illness but who present organic disease.

Weisenburg and his co-workers<sup>17</sup> have reported the case histories of fourteen patients labeled neurotic but whose illness proved to be cancer, heart disease, tuberculosis or other conditions. Weisenburg explained the causes for such errors in several ways. (1) The patient may have been neurotic in the past and when he acquired a new illness this was grouped with the previous neurotic record, (2) Henry Head is quoted to the effect that viscera have cortical representation and that visceral disease may cause psychic symptoms,

(3) in certain illnesses (tuberculosis, anemia) there may be toxic factors that disturb the emotional balance, (4) some patients refuse adequate diagnostic study, (5) there is casual reference also to the fact that in the early state of many disorders diagnostic signs are lacking. Many a patient is diagnosed neurotic because his organic illness is in a "premanifest" state. Weisenburg diplomatically did not stress the common error of absence of signs from absence of search.

Occasionally organic illness is overshadowed by psychic complaints or by social catastrophes. In some cases these psychic complaints attract so much attention that the true cause of the patient's symptoms may be overlooked. The following abstract of a case history illustrates this type of organic disease overshadowed by emotional circumstances.

Miss M. M., aged 25, with an excellent family and past history, became ill with nausea and vomiting. The illness followed a tragic disillusionment in a love affair. The patient grieved, lost her appetite, refused all food and became sleepless. After some weeks she showed definite suicidal tendencies. Because such symptoms followed so closely this keen blow to her pride, her illness was thought to be "nervous" and "hysterical." A psychiatrist was called to see her. Included in the psychiatric examination was a careful study of the abdomen. A small mass was found by palpation, confirmed by x-rays, and removed by operation. This proved to be a carcinoma of the colon but the operative intervention was too late to prevent metastasis.

Another factor that is of extreme importance in obscuring an organic disease by psychic complaints is a marked fear reaction. A local disease process may so alarm the patient that the fear reaction leads to self study, insomnia, trembling, weeping, and such changes in mood as almost to hide the organic disease.

In addition to the neurotic-like complaints masking visceral disease there are several other conditions worthy of mention. The virus of chronic encephalitis selectively attacks the basal ganglia and the diencephalon. The involvement of the basal ganglia disturbs muscle tonus, which results in such symptoms as rigidity, tremors and spasms. Such features of a typical parkinsonism are readily recognized. Less understood are those disorders of the diencephalon occurring after encephalitis and producing metabolic changes, difficulties in respiration, derangement in the rhythm of sleep with occasional bizarre narcolepsies, disturbances in the cardiac activity, digestive upsets, and many peculiar, disagreeable and painful sensations. Such symptomatology in the absence of local tissue changes so resembles a neurosis that it is considered as such. Not uncommonly do we encounter in both the epidemic form of parkinsonism as well as in the senile form of paralysis agitans numerous vague visceral complaints with bizarre aches and pains which suggest a neurosis and are treated as such.

Among such patients and in the early stages of cerebral neoplasm the symptoms may be visceral. When the local search proves negative the patient may be sent away with a label of "neurotic."

In passing may I mention that after moderately severe head trauma patients often present vague subjective complaints. They suffer from headache, dizziness, sensitivity to light and sound, fatigue, insomnia and loss of ambition. In the past such individuals have been labeled "neurotic." However, recent advances in diagnostic study, including encephalography (Strauss and Savitsky<sup>18</sup>), have shown that there is frequently an

<sup>12</sup> Davison Charles and Selby N. E. Hypothermia in Cases of Hypothalamic Lesions. *Arch. Neurol. & Psychiat.* 33: 570 (March) 1935.  
<sup>13</sup> Dresel K. Die Bedeutung der vegetative Zentren für die inner Medizin. *Med. Klin.* 19: 1417 (Oct.) 1923.

<sup>14</sup> Watts J. W. and Fulton J. F. Effect of Lesions of the Hypothalamus on the Gastro-Intestinal Tract and Heart in Monkeys. *Arch. Neurol. & Psychiat.* 33: 446 (Feb.) 1935.

<sup>15</sup> Cushing Harvey. Papers Relating to the Pituitary Body. Hypothalamus and Parasympathetic Nervous System. Springfield, Ill. Charles C. Thomas 1932.

<sup>16</sup> Grant F. C. Neurogenic Origin of Duodenal Ulcer. *Arch. Neurol. & Psychiat.* 33: 442 (Feb.) 1935.

<sup>17</sup> Weisenburg T. H., Yaskin J. C. and Pleasants Henry Jr. Neuropsychiatric Counterparts of Organic Visceral Disease. *J. A. M. A.* 9: 1751 (Dec. 12) 1931.

<sup>18</sup> Strauss Israel and Savitsky, Nathan. Head Injury. *Arch. Neurol. & Psychiat.* 31: 893 (May) 1934.

organic basis for such symptoms. Any lesion, virus, neoplastic and traumatic or toxic,<sup>19</sup> may directly or reflexly disturb the diencephalon and cause visceral symptomatology that may be readily mistaken for a neurosis.

#### ORGANIC AND PSYCHIC DISORDERS COEXIST INDEPENDENTLY

Such a combination is so self evident as not to require further elucidation. It is obvious that a neurotic patient may be troubled by a recognized organic disease that is not related to the neurosis.

#### PSYCHIC INFLUENCES CAUSING PHYSIOLOGIC AND STRUCTURAL TISSUE CHANGES

The influence of the psyche and the emotions on the viscera is by far the most important phase of this theme. This relationship, known through the ages, was neglected by modern doctors until the pioneer work of Cannon<sup>20</sup>.

Cannon demonstrated that cats enraged by dogs responded with an increased output of epinephrine, a rise in blood sugar and an elevation in blood pressure. This neuro-endocrine reaction aroused by fear occurs in human beings as well as in cats and in the depressive emotions of despair and defeat as well as in the militant reaction of rage.

Cannon's teachings have been extended clinically in the field of digestion by Alvarez<sup>21</sup> and others. Alvarez's comprehensive paper cites numerous case histories of patients in whom psychic factors cause profound changes in the secretion and motility of the digestive tract. He quotes the psychologist James: "The abdomen is the sounding board of emotions," and may I add that the splanchnic nerves are the strings which vibrate this sounding board.

Moschcowitz<sup>22</sup> has extended this view still further, mentioning several syndromes which he believes to be psychogenic. His list includes (1) essential hypertension, (2) exophthalmic goiter, (3) gastric and duodenal ulcer, (4) cardiospasm, and (5) irritable or spastic colon and mucous colitis. Moschcowitz states that such diseases are but exaggerations of normal function, they are essentially human diseases and cannot be reproduced experimentally in animals, they rarely occur before the emotive and affective powers are fully developed, their life cycle is characterized by a great tendency to recurrence, their incidence bears a strong relation to world crises or great emotional waves. In the evolution of such organic diseases there are three stages: the constitution of the individual, the fixation of an exaggerated function of the organ affected, and the development of the lesion.

Klauder<sup>23</sup> has made a special study of the influence of the psyche on the skin. He cites numerous cases of emotional disorders causing not only blushing or dermatographia but edema, vesicles, bullae and even ecchymosis and hemorrhages. Schilder<sup>24</sup> has studied vestibular disturbances and reported cases of dizziness

with marked nystagmus produced by unsolved conflicts in the unconscious.

Rozendaal<sup>25</sup> of the Mayo Clinic has reported that liver function may be disturbed by the psyche. He also reports several cases of emotional icterus.

Such emotional derangement of visceral dysfunction occurs commonly in all mental diseases. The occurrence of such derangements in the psychotic states needs emphasis. Indeed, digestive upsets or cardiac disorders may be among the earliest symptoms of psychotic illness.

In the neuropsychiatric clinic at Lakeside Hospital we have found not infrequently that cardiac symptoms are very common in schizophrenia. "My heart is slow, weak, cold," "I do not sleep well," "I stay up nights watching my heart beat, for if I don't it may stop." In melancholias, digestive disorders appear more commonly.

Henry<sup>26</sup> made x-ray studies of gastro-intestinal motility among inmates of a certain state institution and found a close association between the mental mood and the intestinal motility. In the manic phase there was

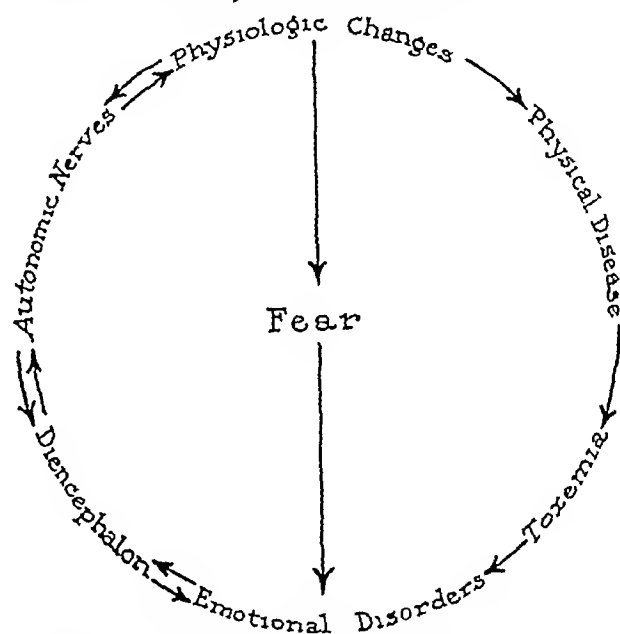


Fig. 3—Correlation between the psychic and the physical forming a vicious cycle forged by fear.

commonly a hypermotility, in the depressive phase, sluggish motility. This study indicates that definite changes in the function of the vegetative nervous system accompany psychoses. Lueders<sup>27</sup> has made a similar study on some 300 psychotic patients and concluded that disorders of the vegetative mechanism were rather frequent among them. He interprets this occurrence not as cause and effect. He believes that patients inherit the vegetative as well as the physical characteristics.

Kuntz says that psychoses cannot be regarded as merely abnormal functioning of the brain or central nervous system but represent changes in the entire individual.

Ziegler<sup>28</sup> cites many case histories showing waves of altered bodily functions paralleling the waves of the

19 In carbon disulfide poisoning there may be somatic and psychic disturbances which may resemble "hysteria" but which are undoubtedly due to pathologic changes in the ganglion cells produced by the action of this chemical.

20 Cannon W B. Bodily Changes in the Emotions, ed 2 New York: D Appleton & Co. 1929.

21 Alvarez W C. Ways in Which Emotion Can Affect the Digestive Tract. J A M A 92:1231 (April 13) 1929.

22 Moschcowitz E. The Psychogenic Origin of Organic Disease. Arch Neurol & Psychiat. 32:903 (Oct) 1934.

23 Klauder J. Psychogenic Aspects of Diseases of the Skin. Arch Neurol & Psychiat. 33:221 (Jan) 1935.

24 Schilder Paul. The Vestibular Apparatus in Neurosis and Psychosis. J Nerv & Ment. Dis. 78:1 (July) 137 (Aug) 1933.

25 Rozendaal H M. Comfort M W. and Snell A M. Slight and Latent Jaundice. J A M A 104:374 (Feb 2) 1935.

26 Henry G W. Gastro-Intestinal Conditions Associated with Mental Disorders. Am J Psychiat. 3:681 (April) 1924.

27 Lueders C W. Gastro-Intestinal Reaction to the Emotions. Arch Int. Med. 42:282 (Aug) 1928.

28 Ziegler L H. Clinical Phenomena Associated with Depressions, Anxieties and Other Affective Disorders. Am J Psychiat. 7:849 (March) 1929.

emotions In a comment on the variation in response of various individuals he remarks, "It is a strange fact that patients so sad that they cannot weep may secrete from the bowel or stomach large quantities of mucus"

May I mention one case history

Mrs C W, aged 50, consulted me four years ago with what appeared to be symptoms of anxiety neurosis She complained of headache, dizziness, anorexia, distention, constipation, marked weakness, insomnia, and so on Thorough study in the hospital revealed no organic basis for the symptoms The illness lasted many months, after which the patient improved somewhat

In the past history, she stated that she had had five or six periods lasting from several months to a year, in which she suffered from similar symptoms During the past year she had her usual complaints plus more profound weeping and melancholia

The family history includes a brother in a state hospital for a depression

It appears as though in this illness the melancholic mood was but a small feature, whereas disturbance in visceral function predominated This disturbance may be looked on as an equivalent of the depressive psychosis of her brother

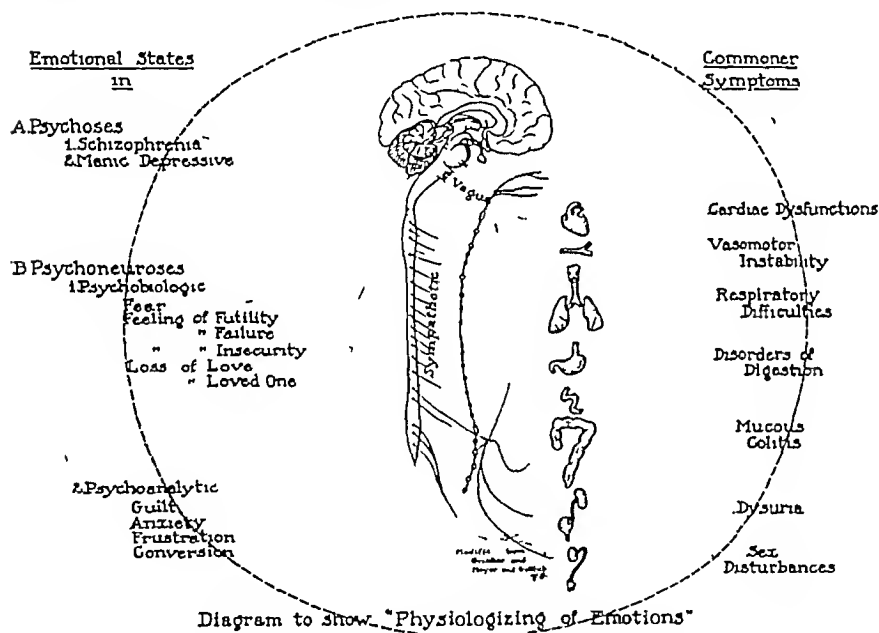


Fig 4—Correlation between the disordered emotional states and the commoner neurotic syndromes by way of the autonomic nervous system

It is not to be wondered at that a psychotic patient should suffer from visceral symptoms The malfunction of the diencephalon may be just as marked as the disturbance in the cortex Delusions of digestion are more common than delusions about deities A patient's own bodily processes are of more concern than the doings of other people

It is in the neuroses that vegetative disturbances dominate the picture The essence of a neurotic illness is some emotional disturbance, often fear, and the viscera are the voice and vocabulary of the emotions Conflict causes dizziness, discouragement, disturbance of the cardiac cycle, despair deranges digestion, shame alters the skin color, tension induces tremors, indecision brings about insomnia, fear spreads through the autonomic system to upset any and all its functions Through the diencephalon and the vegetative pathways every human emotion is physiologized

Psychiatrists are not in agreement as to the nature of neuroses Undoubtedly there are many causes and

many types The two outstanding views may be briefly summarized the psychobiologic concept of Adolph Meyer, the psychoanalytic theory of Freud<sup>29</sup>

In the psychobiologic theory, the chief stress is placed on the conscious life experiences of the individual an unhappy early training, bitter disappointments in love and in a career, the frustration of ambitions, the shaking of the sense of security, the loss of a loved one. These and the hundred other disheartening situations cause grief, remorse, fear, shame, disgust, dread and despair Such emotional disturbances are translated into disorders of bodily function

The psychoanalytic theory is more profound but less clear and is difficult to summarize in a few sentences A neurosis arises out of unresolved conflicts of the unconscious mind Mental processes are guided by the pleasure principle Wishes that are repressed by tabu may ultimately seek outlet, distorted or displaced to some other function The wish and its fulfilment are often accompanied by a sense of guilt There may be a

feeling of aggression or hostility against one or the other parent—a hostility often turned by the conscience or super-ego against oneself The self accusation and feeling of guilt may cause a need for sacrifice, for castration, for self punishment Thus, in the end, neurotic illness may represent a solution, a compromise, an equilibrium Neurotic illness may represent the attainment of the infantile wish often distorted and illogical, accompanied by the appeasing of the sense of guilt through suffering Wechsler<sup>30</sup> describes a neurosis as essentially a repetition of an infantile situation, there is a regression to an early phase of psychosexual development, a withdrawal from reality into the world of phantasy Strecker and Ebaugh<sup>31</sup> characterize a hysterical symptom as the expression of an unconscious fancy serving as a wish fulfilment Stekel<sup>32</sup> speaks of the neurotic mechanism of the conversion of the psychic conflict into a

physical symptom Kendrik<sup>33</sup> explains such illness with a statement, "But we cannot escape by will or logic the intrapsychic punishment, the penance of neurotic suffering which the super-ego imposes"

Whichever view of the neuroses one may espouse, certain features of the neurotic patient are well known Whether by inheritance, by improper training or from unconscious conflicts or conscious difficulties, the neurotic patient is introspective, worrisome, hypersensitive. Gordon<sup>34</sup> characterized the neurotic as an individual in whom the cortical function is impaired and the emotional released He lacks the integration of the

29 Brill A. A. Freud's The Discomforts of Civilization J Nerv & Ment Dis 72:113 (Aug.) 1930

30 Wechsler I. S. The Neuroses Philadelphia W B Saunders Company 1929

31 Strecker E. A. and Ebaugh F. G. Clinical Psychiatry Philadelphia P. Blakiston's Son & Co 1925

32 Karpman Ben. Anxiety Neuroses A Critical Review of the Work of Wilhelm Stekel Arch Neurol & Psychiat, 26:1257 (Dec.) 1931

33 Kendrik, I. Facts and Theories of Psychoanalysis New York Alfred A. Knopf Inc 1935

34 Gordon, R. G. The Neurotic Personality New York, Harcourt, Brace & Co Inc 1927

average normal, there is a tendency for activity to be diverted through vegetative patterns, cortical control is poor, actions are expressed with greater vegetative activity

The hypersensitiveness, the introspective self study, the suggestibility responsive to the saddening sympathy of friends generate fears and it seems as though neurotic symptoms form a vicious cycle forged by fear<sup>35</sup> (fig 3)

Among patients with neuroses the emotional instability becomes expressed through altered visceral function, for the visceral changes are the vocabulary of the emotions

Such visceral changes often serve the ego usefully, for the interest in the bodily disturbance, in his arrhythmic heart, or jumping stomach, or pallor may serve as a screen to hide the deeper emotional strain from the patient and from society. The neurotic illness serves as a flight from reality, a compensation for inferiority, and a source of sympathy and sometimes also financial gain

#### GENERAL CONSIDERATIONS

This correlated view of psyche and soma may clarify some symptoms of illness, but it does not simplify them. It directs attention to a wider responsibility implicit in every diagnostic problem. Not only the local region but the central mechanism must be considered, not merely the psychic or the somatic symptoms but the correlation of the two. Symptoms must be considered as more than the reactions of the cells in the soma, the relation of the psyche to society is also important. This constitutes a difficult problem. Ottenberg<sup>36</sup> recognizes this dual diagnostic problem and says "There are many instances in which it is difficult to say where functional changes end and organic changes begin"

This correlation was the theme of Weisenburg. "Every disease must be considered as having both a somatic and a psychic component. The two components are indivisible and should be evaluated in their relation to etiology and to the total situation." A similar view has been advocated by Schilder<sup>37</sup>. "Emotions and imaginations are never merely psychic, for the psyche is an organic agent. Neither does an organic disease remain at the periphery, it goes to the very center of the personality. Processes that are purely organic do not exist, for the organism is fundamentally a psychophysical entity."

This psychosomatic point of view is not new, for in Ziegler's article there is a quotation attributed to Plato written some 2500 years ago. Plato bemoans the condition of medical practice with the words "For this," he said, "is the error of our day in the treatment of the human body, that physicians separate the soul from the body."

This correlation of psyche and soma makes it possible to understand neurotic illnesses more intelligently. The reality of the neurotic symptoms, however unphysiologic they sound must be believed in, for through the autonomic system actual physiologic and even tissue changes may take place. Alvarez says "Just as there is blushing and blanching of the skin, there may also be vasomotor changes inside."

Symptoms must be interpreted in the light of the possessor's striving and failing, of his joy and grief of his success and failure, for the cortex is but the unfolded cuts

This correlation is portrayed in graphic form by means of the accompanying sketch (fig 4). It attempts to show how certain emotional tensions and states that occur both in psychoses and in the neuroses react on the diencephalic centers and, through their autonomic outflow, cause derangements in visceral function. Such disorders may occur in any or all viscera regulated by the autonomic system. Certain well known syndromes, as for example cardiac neurosis and gastric neurosis, are the consequence.

This connection between the emotional origin and the visceral expressions explain certain characteristics common to neurotic symptoms, they are widespread, poly-systemic, substitutive, ominous. These characteristics reflect their central origin.

#### CONCLUSION

I have sketched briefly the diencephalon, its structure and functions, and have mentioned the autonomic pathways to visceral functions. The diencephalon is important as the connecting link between psyche and soma.

Three main correlations are to be emphasized: (1) Organic disease may cause or appear as psychic, (2) psychic and somatic disorders may coexist and, (3) psychic disorders produce physiologic and even structural disorders.

I have stressed a "psychosomatic concept."

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## Clinical Notes, Suggestions and New Instruments

#### SENSITIVITY TO INGESTED YEAST

JOSEPH B. BIEDERMAN, M.D., CINCINNATI

There are frequent references in the literature to yeast infections and allergic reactions to inhaled yeast but relatively few references to ingested yeast as an offending agent.<sup>1</sup> The experiences of the following patients with "yeast cake" are cited so as to call attention to the danger of possible untoward reactions entailed in its use.

CASE 1.—I. W., a white man, aged 41, had asthma and hay fever for sixteen years. At the onset he had hay fever from August 15 to the first frost. After three years of hay fever, asthma developed. Four years after the development of the seasonal asthma he began to have perennial hay fever and asthma. When he first consulted me he had been having hay fever and asthma daily. His past history revealed the presence of urticaria as a child. The family history shows his father to have had asthma, a daughter asthma and a son eczema. His physical examination was normal except for typical asthmatic breathing and dental caries.

Skin tests with the intracutaneous method showed positive reactions to ragweed, lamb's quarter, pigweed, dust, goose feathers, orris root, cottonseed, kapok, pyrethrum, milk, egg, wheat, buckwheat, herring, onions, potatoes and tomatoes.

After the patient had been placed on a diet eliminating those foods to which he was sensitive after the institution of environmental control and on desensitization against those substances impossible to avoid, he was entirely free from symptoms for nine months. At this time asthmatic symptoms reappeared. Questioning revealed that the day before, on the advice of his wife, he ate a tablet of a well advertised yeast. As soon as

From the Allergy Clinic of the University of Cincinnati College of Medicine.

<sup>1</sup> Taub S. J. Asthma Due to Yeast (by Ingestion). *J. Allergy* 3: 586 (Sept.) 1932. Brown G. T. Sensitization to Fungi. *Ann. Int. Med.* 6: 655 (Nov.) 1932. Feinberg S. M. Allergy in General Practice. Philadelphia: Lea & Febiger 1934. p. 83. Feinberg S. M. and Little N. T. Studies on the Relation of Micro-Organisms to Allergy. *J. Allergy* 6: 564 (Sept.) 1935.

35 Fetterman J. L. Traumatic Neurosis Among Industrial Patients. *Ohio State M. J.* 28: 650 (Sept.) 1932.

36 Ottenberg Reuben in discussion on Moschowitz.

37 Schilder Paul. Psychophysiology of the Skin. *Arch. Neurol. & Psychiat.* 33: 223 (Jan.) 1935.



he put the yeast in his mouth he felt a tingling and burning sensation there, and one minute later he had asthma. Five minutes later troublesome eructations began and continued for six hours. He immediately took three-fourths grain (0.05 Gm) of ephedrine sulfate and repeated this dose every fifteen minutes for four doses but with no relief. He came to my office after twenty-four hours of unrelieved asthma. Eight minims (0.5 cc) of epinephrine hydrochloride 1:1,000 was given immediately, with some but not complete relief. Half an hour later a repetition of the same dose gave him relief. The day after the patient had completely recovered he returned for tests with the substances present in yeast cake.

The ingredients of this yeast cake are yeast, carotene, cottonseed oil, tapioca and cornstarch. Extracts of these ingredients were made for testing. Enough water was added to some yeast to make a thick suspension. This was allowed to stand in the icebox for seventy-two hours. It was then autoclaved for twenty minutes at 18 pounds pressure. After it had been determined that it was sterile, the supernatant fluid was diluted 1,000 times and used thus for testing. Carotene was used as a saturated solution. (This must be made up fresh, for it deteriorates rapidly.) Cottonseed oil was used in full strength. The tapioca and cornstarch were placed in 250 cc beakers, and each had Coca's solution added to them until there remained an inch of fluid above each substance. They were covered with a layer of toluene and placed in the refrigerator for seventy-two hours. They were then filtered through a Seitz filter found to be sterile and ready to be used for testing.

Intracutaneous tests were negative for cornstarch, tapioca, carotene and cottonseed but they were very marked for yeast 1:1,000.

They were all negative when read twenty-four and seventy-two hours later. Patch tests were negative with all. Passive transfer tests were positive only with yeast 1:1,000.

The patient was then given one-fourth teaspoonful of yeast to take internally. Within one minute he had asthmatic wheezing preceded by a sensation in his throat and stomach described as follows: "I felt as though my throat and stomach had been rubbed with sandpaper." This attack was relieved by 8 minims (0.5 cc) of epinephrine 1:1,000. Two days later, after the patient was again feeling fine, he was given one-fourth cake of yeast that had been boiled for one hour and then cooled. Seven minutes later he developed a slight amount of wheezing, which passed off in fifteen minutes without necessitating the use of epinephrine. The other ingredients of the yeast cake when taken internally caused him no trouble. Since eliminating yeast from his diet he has remained symptom free.

**CASE 2**—Miss E. D., aged 20, white, complained of eczema, which had been present since infancy. The eczema has most frequently been localized to her face and neck, the flexor surfaces of the forearms and the popliteal areas, but there had been periods when the itching and eruption involved the entire body. The lesions were described as small red papules which would become hard and itch intensely. The skin would then split and begin to ooze a thin fluid, the itch continuing. There had been no change in her daily routine other than that she began to take internally a well known yeast one month before consulting me. She does not like milk and relates that her mother told her that she vomited the first milk given to her as an infant. Her past history revealed the presence of urticaria and angioneurotic edema. The family history showed that her grandfather had asthma and a brother had hay fever.

Physical examination was entirely normal except for a typical generalized weeping eczema, worse on the face, neck, popliteal areas and the flexor surface of the forearms. She was constantly scratching.

Intracutaneous skin tests showed positive reactions to milk, eggs, tomatoes, navy beans, kidney beans, wheat and yeast. After she had been placed on an elimination diet avoiding those substances to which she was skin sensitive, the patient's skin cleared up entirely and the itching disappeared. When she had been entirely free from symptoms for six weeks she was told to eat a cake of yeast. Within twenty minutes she began to itch over her entire body but worse around the margin of her

hair. Her face and neck, the flexor surface of the arms, and the popliteal spaces broke out again into a typical eczematous eruption. Since then on avoiding everything containing yeast as well as other things to which she was sensitive she has been entirely well.

**CASE 3**—M. F., a white man, aged 28, consulted me because of attacks of sneezing and a nasal discharge present daily for the past four months. He sneezed from four to six times in succession on an average of ten to twelve times a day and was sometimes awakened during the night with sneezing spells. He was unable to name anything that aggravated his condition. Ephedrine internally and epinephrine locally relieved him temporarily, he said. His past history revealed the presence of urticaria after eating strawberries. His family history revealed the fact that his sister also had sneezing spells and a thin watery nasal discharge.

Physical examination gave normal results except for pale, boggy, enlarged turbinates.

Skin tests with all the ordinary pollens, other inhalants and foods were entirely negative except for yeast 1:1,000. On again being questioned, the patient recalled that he had started four months before to take yeast internally daily and still did take it but did not think it worth while mentioning. He was instructed to stop taking yeast and to avoid all foods containing yeast. He became entirely well. For six weeks his biscuits were made without yeast, only baking powder, flour, lard, salt and water being used. After being free all this time he was instructed to add some yeast to his biscuits. He returned the following day stating that two hours after eating two biscuits for breakfast his nose began to discharge a thin watery secretion and that he sneezed eight times in succession. Three such paroxysms occurred within two hours. Four hours later he had another paroxysm of sneezing and nasal discharge. After again discontinuing all products containing yeast he was free from symptoms.

This case is extremely interesting in that the patient had always been able to eat bread and biscuits made with yeast, but since he began partaking of yeast as such he evidently sensitized himself so that he became unable to use even the amount of yeast used in cooking.

**CASE 4**—Mrs. E. W., aged 30, a housewife, complained of urticaria, angioneurotic edema and a gnawing sensation in her abdomen present for the past year. Not a day passed during which she was free from symptoms. Her past and family histories were negative for allergic manifestations. Her physical examination gave essentially normal results except for swollen eyelids and lips as well as urticarial lesions scattered over her body.

Roentgen examination of the gastro-enteric tract gave normal results. Extensive intracutaneous skin tests were negative except for yeast 1:1,000. This was completely eliminated from her diet and she became free from symptoms. Instead of eating bread made with yeast she made biscuits with baking powder, flour, lard, salt and water. These biscuits caused no trouble. She was then instructed to add some yeast to the biscuits. Three biscuits about 2 inches in diameter were eaten. One and one half hours later she began to itch, hives broke out over her body, and her face became swollen. Eight hours later she began to have a gnawing sensation in the abdomen. She was told to discontinue eating biscuits made with yeast and she again felt fine and has been well ever since.

#### COMMENT

It is interesting to note that one of these patients who was formerly able to tolerate the amount of yeast used in cooking was later unable to use the same amount after ingesting for a short time a nationally advertised yeast cake. The relatively large quantity of ingested yeast probably sensitized him so that he was later unable to tolerate even the amount of yeast used in cooking. In deciding which patients to instruct to omit yeast cakes from their diets one must remember that the yeast cake contains other ingredients, such as corn and tapioca, which may also cause untoward reactions. In conclusion I would suggest that yeast be included in making routine skin tests.

## Special Article

### AUTHORIZATION OF PHYSICAL EXAMINATIONS, TREATMENT, OPERATIONS AND AUTOPSIES

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CHICAGO

A physical examination of a patient cannot be made or an operation done, lawfully, without authority. Authority is necessary, too, before a physician can lawfully apply to a patient any prophylactic, diagnostic or therapeutic agent, such as a vaccine, a splint, roentgen rays, or an anesthetic or any other drug. A person who does any of these acts without authority commits a battery or a trespass, or both, for which, according to the circumstances of the case, he may be fined or imprisoned or made to pay damages.<sup>1</sup> Even after the death of a patient his right to freedom from interference automatically passes in a modified form to his spouse or to his next of kin, and any unauthorized interference with his dead body exposes the offender to a suit for damages by the person entitled to its custody.<sup>2</sup> My purpose in this paper is to show, so far as the limits of available space permit, what constitutes lawful authority for the doing of these acts, the performance of which plays so large a part in the daily work of the medical profession.

The principles governing the authorization of physical examinations, operations and treatment are identical. The term "operation" is used, therefore, throughout this discussion, for the sake of brevity, to cover all of them. Autopsies are separately discussed. While the principles stated are of general application throughout the United States, it must be understood that in some states they may be modified by statute or by court decision, and in case of doubt and dispute the physician will do well to take the advice of competent counsel before he proceeds.

#### LAWFUL AUTHORITY DEFINED

Lawful authority for the physical examination of a patient, an operation or local treatment arises only (1) out of a legal duty or (2) out of the consent of the patient or some one authorized to act on his behalf.

Lawful authority arising out of legal duty need not detain us long. It concerns only officers of the government while acting within the scope of the authority vested in them by law, such as a physician authorized under the eugenic sterilization law of his state to sterilize an inmate of a state institution. If the law under which the operation has been authorized is a valid constitutional law, and if procedure leading up to the order for sterilization has been in conformity with that law, and if the operation is done in accordance with that order, the physician authorized to perform the operation incurs no personal liability in performing it even over the protests of the person on whom he operates. The same principle of authority arising out of legal duty protects physicians in charge of institutions

for insane and mentally defective persons with respect to the wards lawfully given into their custody, sheriffs and jailers with respect to convicted prisoners lawfully committed to their keeping, so far as may be necessary for the proper discharge of their duties, and health officers charged with the duty of enforcing vaccination and quarantine laws. But the conduct of all such officers is subject to review by the courts, and if they act beyond the scope of their duties or act unlawfully even within the scope of their duties they are liable at least for the payment of damages. Their misconduct too may constitute an offense for which they are criminally liable and in any event lead to disciplinary action and possibly loss of office. Fortunately, such officers generally have at their command, without cost to themselves, the services of competent lawyers who can advise them before they act and protect them afterward. The practicing physician, however, ordinarily has no opportunity to take legal advice and could hardly afford to do so even if time permitted. He must act immediately, according to his best judgment, and assume liability for the consequences. It is important, therefore, that he constantly bear in mind the principles on which his judgment must be formed.

In the every day practice of medicine, lawful authority for the physical examination of a patient, an operation or treatment is nothing more than valid consent. Consent, however, even by the patient himself, is not necessarily valid. Consent may be invalid (1) because it undertakes to authorize an unlawful act or an act contrary to public policy, or (2) because it comes from a person who has no lawful right to give consent, or (3) because it was obtained by misrepresentation or fraud.

Consent to a criminal abortion, for instance, is void for such an operation is unlawful.<sup>3</sup> Consent to an experimental operation that will greatly endanger the life of the person to be experimented on and that is to be performed not for the relief or cure of disease or injury from which he is suffering but solely for the advancement of the science and art of medicine in general is usually regarded as contrary to public policy and therefore void, for in theory at least the harm that might be done to society by such experimentation outweighs its possible benefits. It is conceivable that circumstances may develop some day that will be looked on as justifying an experimental operation or treatment of the kind described but until that day comes the community is not likely to sit idly by and see a man commit suicide by juggling with life and death with the aid of an experimenter any more than it is to sit idly by and watch him commit suicide in any other way. Operations for sexual sterilization when such sterilization is not necessary for the prevention or cure of disease or antisocial tendencies are generally regarded as contrary to public policy, a view that finds strong support in the widespread legislation forbidding the indiscriminate distribution of information as to how conception may be prevented and the indiscriminate distribution of devices and preparations designed to accomplish that end. Consent to a sterilizing operation is therefore probably void unless the operation is designed to prevent or cure disease or antisocial tendencies.<sup>4</sup> However desirable it may be to limit the offspring of particular families, the limitation of the natural increase of the normal population is generally regarded as contrary to public interests.

1 *Hershey v. Peake* 115 Kan. 562, 223 P. 1113. *Schloendorff v. N. Y. Hospital Soc.* 211 N. Y. 125, 105 N. E. 92. *Francis v. Brooks* 156 N. E. 609. *Roteler v. Strain* 39 Okla. 572, 137 P. 96. *Hively v. Hugg* 120 Ore. 588, 253 P. 363. *Throne v. Wandell* 176 Wis. 97, 186 N. W. 145.

2 *Medical College v. Rushing* 1 Ga. A. 468, 57 S. E. 1083. *Louisville v. N. R. Co.* 3 Blackmon 1 Ga. A. 80, 59 S. E. 341. *Myers v. Clark*, 122 Ky. 866, 90 S. W. 1049. *Barney v. Children's Hospital* 169 Mass. 57, 47 N. E. 401. *Larson v. Chase* 47 Minn. 307, 50 N. W. 238. *Foley v. Phelps* 1 App. Div. 551, 37 N. Y. Supp. 471.

3 *Milliken v. Heddensheimer* 110 Ohio St. 381, 144 N. E. 264, 33 A. L. R. 53 and note. *Martin v. Hardisty* (Ind.) 163 N. E. 610 but see *Szadwicz v. Cantor* 257 Mass. 518, 154 N. E. 251, 49 A. L. R. 959 and note and *Nash v. Neiver* (Ida.) 31 P. (2d) 273.

4 *Christiansen v. Thornby* (Minn.) 255 N. W. 620.



Consent to a physical examination, an operation or treatment must be the rational act of a qualified mind. It may not be amiss, here, to point out that the law itself sometimes infers such consent from the necessities of the situation, as when a person has been injured and is unable to speak for himself and there is no one present to speak for him. A person who has attained his majority and is of sound mind is presumptively qualified to give or withhold consent,<sup>5</sup> but the presumption may be rebutted by evidence showing that when consent was given he was too drunk, or too far under the influence of narcotic drugs, or delirious, or comatose, and therefore incapable of exercising rational judgment. The fact that a patient is being treated free or at the expense of some one else does not do away with the necessity for obtaining his consent. The fact that some one else is paying for the treatment of the patient does not give the benefactor the right to consent on behalf of the patient. Subject to the conditions just stated, a man or a woman of mature years and sound mind has the right to authorize an operation on his or her own body, even though he or she may be married. The consent of the spouse is not necessary.<sup>6</sup> In the case of a married woman this is true even though she charges the cost of the operation to her husband,<sup>7</sup> except possibly in the case of an operation that is not necessary for the preservation of health or the prolongation of life but is for cosmetic purposes only. An operation for the preservation of health or the prolongation of life is legally classed as a necessary of life, for the cost of which in most states a married woman has the right to pledge her husband's credit if he himself has not provided for her needs.<sup>7</sup> Whether an operation for cosmetic purposes only would be regarded as a necessary of life would depend doubtless on the nature of the defect or deformity for which the operation was done, for, while most cosmetic operations could hardly be so classed, it is not inconceivable that a defect or a deformity might so interfere with a woman's social relations as to make its correction necessary to her enjoyment of a normal life.

Whether a child who has not attained his majority, but who is of sound mind and has attained the years of discretion, can or cannot give valid consent to an operation is not clear.<sup>8</sup> The fact that such a child can lawfully make a contract for medical services as one of the necessities of life may be construed as authorizing him to consent to a physical examination, an operation or treatment, at least when the cost is to be paid out of his own estate. There may be a conflict, however, between the authority of the parents and the authority of the child, especially if a child is under treatment at the expense of his parents. Such a conflict, fortunately, will seldom confront the physician and if it does it must be settled according to the circumstances of the case and the law of the community in which it arises. While it is being settled, the physician will do well to refrain from action unless action is imperatively necessary to preserve the health or life of the child.

Operations on minor children, at least on those who have not attained years of discretion, may be lawfully authorized by the parents or, if there is no parent, by a

guardian.<sup>9</sup> Consent in such cases is sometimes obstinately withheld by the parents on account of ignorance or religious scruples. In an extreme emergency, one in which any delay whatever will jeopardize the life of the child, the only proper course for a physician to follow is to do what is necessary, if circumstances permit. He should prepare in such a case to defend himself against the possible consequences of his act, preferably by supporting his opinion by the opinions of qualified consultants as to the existence of an emergency and as to the proper course to be pursued. A parent has no more right to kill his child by neglect than he has to kill it by poison or strangulation, and a person who saves a child from death by neglect is in the same position as the person who saves it from death by deliberate poisoning or physical violence, and, although he is more apt to be sued and to be compelled to justify his course, there is but little likelihood of his being held either civilly or criminally liable. The difficulty most likely to be encountered in such a case, however, arises out of the fact that the ill or injured child may be in the custody of its parents in their own home and a physician cannot obtain access. Moreover, facilities for the necessary operation or treatment and for after-care would be found absent even if access could be obtained. In a case of that kind, the only recourse of the physician or those interested in the child's welfare is to report the case to the prosecuting attorney and the police authorities, and to any available child welfare agency, with a view to having them initiate immediate action through the court to save the child's life or to protect its future welfare. That is the course that should be followed also in any case in which the need of the child for immediate treatment is not urgent, the proper police and welfare authorities of the community should be put into the position of assuming responsibility for procuring the necessary authority for treatment.

Consent to physical examinations, operations and treatment of mentally defective and insane persons bears a close analogy to consent to physical examinations, operations and treatment of minor children. If a mentally defective or insane person is under guardianship, the guardian's consent should be obtained, if possible. If the patient is not under guardianship, he may still be mentally capable of assenting to an operation, especially in view of the fact that he is capable in law, despite his mental defect or insanity, of entering into a contract for medical services as a necessary of life. In case of doubt, however, the same course should be pursued with respect to mentally defective and insane persons as has been outlined with respect to children, in cases in which there is obvious need for physical examination, an operation or treatment and the parents refuse consent.

Except that a parent can authorize an operation on a minor child, there is no kinship or relationship by marriage that gives any one the right to authorize an operation on any one else. It follows, of course, that mere friendship for the patient, no matter how intimate, confers no such authority on the friend. It does not follow, however, that consent by a child or other kin, or by a relative, or even by a close friend, is entirely without value. If a child or other kin, a relative or a friend, in a case in which a patient is unable to speak for himself, authorizes or refuses to authorize an operation, his action may go a long way toward satisfying or at least mollifying other children and the kinsfolk and relatives of the patient who might otherwise be dissatisfied, and the fact that such consent had been

<sup>5</sup> Knowles v. Blue, 209 Ala. 27, 95 So. 481; Pratt v. Davis, 224 Ill. 300, 79 N.E. 562; L. R. A. (N.S.) 609; Mohr v. Williams, 95 Minn. 261, 104 N.W. 12; L. R. A. (N.S.) 439.

<sup>6</sup> Burroughs v. Crichton, 48 App. (D.C.) 596, 4 A.L.R. 1529 and note; State v. Housekeeper, 7 Md. 162, 16 A. 382; McClallen v. Adams, 19 Pick. (Mass.) 333, 31 Am. Dec. 140.

<sup>7</sup> McClallen v. Adams, 19 Pick. (Mass.) 333, 31 Am. Dec. 140; Lowenstein v. Widdicombs (Mo.), 52 S.W. (2d) 1044.

<sup>8</sup> Moss v. Rishworth (Texas), 222 S.W. 225; Browning v. Hoffmann, 90 N.W. 568, 111 S.E. 492; Bakker v. Welsh, 144 Mich. 632, 108 N.W. 94; Gulf & S.I. R. v. Sullivan (Miss.), 119 So. 501; Bishop v. Shurly (Mich.), 211 N.W. 75.

obtained might tend at least to mitigate the damages awarded, if any

Authority for an operation obtained by misrepresentation or fraud on the part of a physician is not lawful authority and does not afford protection to the physician.<sup>9</sup> To represent to a patient that an operation is necessary to save life or to preserve health when that is not the case, or that it is less severe or extensive than it is, or that it will give greater relief than there is any reasonable prospect of it giving, or that there is less danger in the operation than in fact exists, is to perpetrate a fraud on the patient which vitiates his consent. Tactful honesty and frankness on the part of the physician are essential.

#### LIMITATIONS ON PHYSICAL EXAMINATIONS, OPERATIONS AND TREATMENT

Ordinarily an operation must be performed strictly within the limits of the authority that has been given.<sup>10</sup> Authority may be given, however, for the operating physician to use his own judgment, and this usually should be demanded by the physician. If under any circumstances it is deemed proper to perform an operation the limits of which are fixed by the patient or some one acting on his behalf, without authority being granted to the operating physician to vary the proposed operation as in his judgment circumstances indicate, it is advisable, if the patient is under a general anesthetic or under the influence of a narcotic drug or is liable to become irrational, to insist that some one be present during the operation who is vested by the patient with full authority on his behalf to authorize extensions and modifications in the procedure. Even in the case of a limited operation and in the absence of any such representative of the patient, the operating physician must, in case of reasonable necessity, do whatever may be necessary for the safety of the patient.<sup>11</sup> The ordinary legal implication is that if the patient had known beforehand of the circumstances that make a modification or extension of the operation necessary, or if at the moment he could exercise rational judgment, he would give his consent, for human experience teaches that man generally consents to what is to his benefit. The law therefore ordinarily implies consent, although in at least one case the court has held to the contrary.<sup>12</sup> What has been said does not mean that an operating physician can in the course of an authorized operation perform a supplementary operation or a different operation<sup>13</sup> particularly one with respect to the need for which the patient has been fully informed, and to the performance of which he has refused to consent.

#### CONSENT TO AUTOPSIES

An autopsy, for the purposes of this discussion, means the puncture or the cutting of a dead body for any purpose whatever. 'Autopsy' is popularly synonymous with 'postmortem examination'. The latter term, however, is sometimes used in a more restricted sense, meaning only the examination of the dead body by inspection and possibly by palpation and manipulation without puncture or cutting, but what is written here has no reference to postmortem examinations in this more restricted sense. Neither has it any reference to the dissection of dead bodies authorized by the anatomic acts in force throughout the United States.

Authority to consent to autopsies is based on principles somewhat different from those underlying authority to consent to physical examinations, operations and treatment. Whether a person can by his will or by any agreement made before his death authorize an autopsy on his dead body is a question with respect to which the laws and court decisions of the several states differ.<sup>14</sup> The question is possibly of not as great importance to the medical profession as it might seem to be, for if after the death of a person the surviving spouse or the next of kin who ordinarily has authority over the body chooses to ignore the authority or directions given by the deceased, the expense and trouble of contesting the issue in court would probably deter the average physician from insisting on any supposed rights given him by the deceased. Ordinarily, the right to determine whether an autopsy may or may not be done is vested in the surviving spouse.<sup>15</sup> If there is no surviving spouse, then it is ordinarily vested in the next of kin, in order of kinship.<sup>16</sup> Under such circumstances, a child of the deceased has rights superior to those of any one else—unless it be the coroner or medical examiner. In the absence of a child or children, authority over the dead body normally vests in parents and, if there are no parents living, then in brothers and sisters and so on through various degrees of consanguinity. The law has not undertaken to fix the relative rights of persons of equal degrees of kin, that is, the relative rights of several children or of several brothers and sisters, and so on. Generally it will be found that some one of a given group will be at the place of death and will assume charge of the body, and it is to such a one that application will generally be made for permission to perform an autopsy. Almost universally, such consent is recognized as valid by other members of the group, but even if it should not be the dissenting members would have difficulty in proving they had suffered damage by any supposed trespass on their rights.

Universally, when death has been due to violence or there is reasonable ground for believing that it has been caused in that way, the right to the custody and control of a dead body vests immediately in the coroner or the medical examiner. The jurisdiction of such officers may be even more extensive, and they may be entitled to the custody and control of any body that is found dead when it is not known already that death has been due to natural causes. When the coroner or medical examiner has control of a dead body his authority is supreme. He is entitled to the body in the condition in which it was at the moment of death. Generally, he is authorized to perform an autopsy on any body coming into his lawful custody, at least within certain limits.<sup>17</sup> It is important, therefore, that a physician should not undertake to perform an autopsy without the consent of the coroner or medical examiner in any case in which the body is properly within the jurisdiction of such an officer. It is equally important for the welfare of the physician that he undertake to perform no autopsy on the basis of authority from the coroner unless he is sure that the coroner has jurisdiction over the body and power to authorize the autopsy. Unless a coroner or a medical examiner has legal jurisdiction over a body, any

14 *Pierce v. Swan Point Cemetery*, 10 R. I. 227. 14 Am. Rep. 667. *Enos v. Snyder*, 131 Calif. 68, 63 P. 170. *O'Donnell v. Slack*, 123 Calif. 285, 55 P. 906. *Notes*, 82 Am. Dec. 510, 75 A. S. R. 425, 3 Ann. Cas. 135.

15 *Barney v. Children's Hospital*, 169 Mass. 57, 47 N. E. 401. *Larson v. Chase*, 47 Minn. 307, 50 N. W. 238. *Koerber v. Patek*, 123 Wis. 453, 102 N. W. 40.

16 *Wynkoop v. Wynkoop*, 42 Pa. St. 293, 82 Am. Dec. 506. *Pettigrew v. Pettigrew*, 207 Pa. St. 313, 56 A. 578. *Notes*, 82 Am. Dec. 512. 14 L. R. A. 85, 3 Ann. Cas. 134, 14 Ann. Cas. 470.

17 *Palenzke v. Brunning*, 98 Ill. App. 644.

9 *Knowles v. Blue*, 209 Ala. 27, 95 So. 481. *State v. Housekeeper*, 70 Md. 162, 16 A. 382. *Pratt v. Davis*, 224 Ill. 300, 79 N. E. 562. 10 *Roteler v. Sprain*, 39 Okla. 572, 137 P. 96. *Winkler v. Hawes*, 126 Ia. 474, 102 N. W. 418. 11 *Mohr v. Williams*, 95 Minn. 261, 104 N. W. 12. *Higley v. Jeffrey* (Wyo.), 8 P. (2d) 96. *Delahunt v. Finton* (Mich.), 221 N. W. 168. 12 *Franklyn v. Pesbody* (Mich.), 228 N. W. 681. 13 *Hively v. Higgs* (Ore.), 253 P. 363. *Perry v. Hodgson* (Ga.), 140 S. E. 396.

purported authority given by him for the performance of an autopsy is void and the physician who does an autopsy by such purported authority does so at his own peril<sup>18</sup>

What has been said with respect to the necessity for confining physical examinations, operations and treatment within the limits of the authority given by the patient or some one on his behalf applies with equal force to authority for autopsies. The person who has the right to give authority for an autopsy has authority also to state the limits within which that autopsy shall be performed, and the autopsy must be performed strictly within those limits<sup>19</sup>. One who transgresses those limits is guilty of a trespass and may find himself liable for damages. While consent to an autopsy unless specifically restricted, presumably implies authority to remove for examination and study such parts of the body as must be examined and studied in order to accomplish the purpose of the autopsy, it does not confer authority for the promiscuous removal of certain parts of the body for class instruction or as museum pieces.

#### FORM OF CONSENT

Consent to an operation or an autopsy may (1) be implied by the circumstances of the case or (2) be given by word of mouth or (3) be given in writing. All forms of consent are equally binding, but consent should be in writing, if possible, in order to avoid misunderstanding and to facilitate proof of consent.

#### IMPLIED CONSENT

"Actions speak louder than words." When a patient of mature years and sound mind, who knows that he is at liberty to submit or to refuse to submit to an examination operation or treatment, knows or is fully and fairly informed by his physician as to an examination, an operation or treatment that is to be undertaken and then cooperates with the physician in bringing it about, he has impliedly consented to it, even though he has not consented in words<sup>20</sup>. Such implied consent is the consent customarily given in everyday practice, especially with reference to minor activities. It is less common with respect to autopsies, although the same principle applies, that is, if the person lawfully having custody of the body, authorized to say whether an autopsy may or may not be performed, and having a knowledge of his rights, cooperates in bringing about the performance of the autopsy or stands by and sees it performed, he impliedly consents to it. Implied consent to operations and to autopsies, however, always carries with it the possibility of misunderstanding as to the purpose and scope of the undertaking and of difficulty of proof in case of controversy.

It is under the legal concept of implied consent that a physician is permitted in an emergency to operate on a delirious or unconscious person who is unable to determine for himself whether an operation shall or shall not be done<sup>21</sup>. Such a situation frequently arises in connection with serious accidents. Of course, if any one having authority to act for the mentally incompetent person is present, or if, without jeopard-

izing the welfare of the patient, any such person can be communicated with before operating, consent should be obtained in the usual manner. As has been pointed out, the absence of such consent need not deter a physician from proceeding with the operation, for the law presumes that a person mentally incapacitated consents to having done for him what is in his own interest, and, if an operation is in the interest of the patient, the consent of the patient is implied. While the consent of kin and relatives of a patient, other than the parents of a minor child and the consent of friends of the patient, are of value in supporting the judgment of the physician, such kin, relatives and friends have no legal right to act for the unconscious patient. Their authority is no greater than that of the attending physician, and their responsibility is much less. The physician may find it necessary, therefore, to act on the basis of his own judgment, even contrary to what kin relatives, other than the parents of a minor child, and friends of the patient advise. He must be prepared, however, to justify his course, in court, if it is called into question.

#### ORAL CONSENT

Consent by word of mouth to an operation or an autopsy is probably the most common form of consent. Ordinarily it is supplemented by implied consent, for instance a patient after orally consenting to an operation, cooperates with the physician in its performance. Oral consent is, however, open to misunderstanding and may be difficult of proof. Whenever it is to be relied on, an effort should be made to make the entire situation and proposed operation as clear as possible to the person whose consent is sought, and consent should be given in unequivocal terms. If these precautions are taken in the presence of one or more disinterested witnesses, there is little likelihood of trouble and if trouble comes the physician will have an adequate defense.

#### WRITTEN CONSENT

Written consent to an operation or to an autopsy is by far the safest, for it permits a clear record of the nature and extent of the operation or autopsy that is authorized. Written consent, as a condition precedent to an operation or an autopsy, is more easily required by a hospital than by a private practitioner, for the relations between a hospital and the patients in it are more impersonal than are corresponding relations in private practice. Nevertheless, in view of the modern tendency toward depersonalization in the relations between physician and patient even in private practice, written consent should be obtained in all cases if possible.

No particular form is necessary to give validity to written consent to an operation or an autopsy. The essential requirements are that it state clearly the nature and extent of the operation or autopsy that is authorized and that it be signed by a person legally qualified to give consent. The inclusion of the place and date of execution and the signature of a witness are desirable but only because they tend to facilitate proof. Any paper-writing purporting to give consent to an operation or an autopsy should be preserved not only until the completion of the operation or the autopsy but for a period thereafter sufficient to cover the entire time within which, under the statute of limitations of the state, a suit may be instituted.

To provide proper forms for written consent to operations and autopsies or at least forms that can be used by others as the basis for the preparation of forms that may seem to them better, or more in harmony with the requirements of some state or institution, the

18 *Palenzke v. Bruning* 98 Ill. App. 644. *Streipe v. Liberty Mutual Ins. Co. (Ky.)* 47 S. W. 1004.

19 *Koerber v. Patek* 123 Wis. 453. 102 N. W. 40.

20 *Knowles v. Blue* 209 Ala. 27. 95 So. 481. *State v. Housekeeper* 70 Md. 162. 16 A. 382. 2 L. R. A. 587. *McClallen v. Adams (Mass.)*

19 Pick. 333. 31 Am. Dec. 140. *McGuire v. Rix (Neb.)* 225 N. W. 120.

*Roteler v. Strain* 39 Okla. 572. 137 P. 96. 50 L. R. A. (N. S.) 880.

See notes in 1 L. R. A. (N. S.) 441. 50 L. R. A. (N. S.) 880.

21 *Pratt v. Davis* 224 Ill. 300. 79 N. E. 562. *Short v. Succ* 45 La.

Ann. 1485. 14 So. 184. *Delahunt v. Finton* 244 Mich. 266. 221 N. W.

168. *Mohr v. Williams* 95 Minn. 261. 104 N. W. 12. *McGuire v. Rix*

(Neb.) 225 N. W. 120. *Schloendorff v. N. Y. Hospital Soc.* 211 N. Y.

125. 105 N. E. 92. *Moss v. Risbworth (Texas)* 222 S. W. 225.

appended drafts are offered. The explanatory matter appended to each form may well be printed as a part of the form itself, particularly in institutions where the intervals between operations and autopsies are considerable and officers and employees have little opportunity for becoming acquainted with proper procedure. In institutions where the obtaining of consent to operations and autopsies is a matter of everyday routine, the rules and regulations governing the obtaining of consent may, possibly without disadvantage, be printed separately and posted in proper places throughout the institution, for the information and guidance of those officers and employees by whom consent must be obtained.

#### POSTMORTEM CESAREAN SECTIONS

The authority and duty of a physician in attendance at the death of a woman who has within her body at the time of death a living viable child have not been defined by statute or court decision. A surviving husband, if there is one, ordinarily has a legal right to the custody of the body of his deceased wife in the condition in which it was when she died and the body cannot be lawfully mutilated in any way without his consent. Presumably he has, too, certain legal authority and responsibility with respect to his unborn living child. But the idea that a surviving husband can lawfully kill his unborn child, in the body of his deceased wife, by withholding his consent to the simple procedure that would save the child's life, is untenable. While the consent of the surviving husband should be obtained, therefore, if practicable, before delivering a living, viable unborn child by postmortem cesarean section, a physician can probably with impunity perform the operation without that consent and even against the surviving husband's wishes if there is reasonable belief that thereby the life of the child will be saved. Whatever the legal, technical rights and wrongs of such a procedure may be, it is impossible to conceive of any ground on which the surviving husband could claim substantial damages—if he could claim any—on the ground that the body of his dead wife had been operated on without his consent in order to preserve the life of his child.

#### Suggested Form for Consent to Operation

Insert name of hospital

State address of hospital

#### CONSENT TO OPERATION

No

Name of patient

Ward

Bed

Case No

Age

years Sex

Race

Marital Status

1 I have been advised and believe that an operation should be performed on me to

State nature or purpose of operation

whichever may better describe the situation

2 I authorize

Insert name of operating surgeon

and such anesthetists and assistants as he may employ to operate on me for the purpose named. The operation is to include whatever in the judgment of the operating surgeon is necessary to accomplish the purpose named. He may use his discretion as to whom, if anybody, he will have present to witness the operation.

3 If any conditions are discovered at the time of the operation that were not recognized before and that, in the judgment of the operating surgeon call for surgical procedures, in

addition to those contemplated by paragraphs 1 and 2, above, I authorize him to do whatever under the circumstances he may deem necessary in my interests.

NOTE.—If the patient is not willing to give the general consent stated in this paragraph then the paragraph may be canceled and paragraph 4 left in effect. If the patient gives the general authority covered by paragraphs 1, 2 and 3 paragraph 4 may be stricken out.

4 I authorize

Insert name of patient's agent, an adult

to act for me on my behalf while I am under the influence of the anesthetic and so long as I cannot rationally act for myself, to consent or to refuse to consent to such other and further operative procedures as may be advised by the operating surgeon during that time, because of conditions found at the operation that were not previously recognized. I assume full responsibility for anything said agent may do on my behalf.

5 If the patient's consent is to be modified in any way beyond what is indicated above, the modification should be stated here before the blank is signed.

6 Name and address of spouse, parent, child, nearest relative or next friend

Signature of patient or person authorized to act on his behalf

Date

\*Street and number

Witness

City and state

\*Street and number

City and state

\*State usual place of abode

#### INSTRUCTIONS CONCERNING CONSENT TO OPERATION

While the suggested form for consent to operation has been prepared primarily for use by hospitals, there is no reason why it should not be used in connection with operations outside such institutions. The rules governing consent to operations are the same in the two cases.

(a) While written consent to operation is not necessary, it is desirable that consent should be in writing in order to avoid misunderstandings and to facilitate proof of consent.

(b) The consent of the patient is necessary and is sufficient to authorize any lawful operation if he (1) has attained his majority and (2) is at the time of giving consent competent to understand the nature and purpose of the operation proposed and the risks involved, and (3) does in fact understand the nature, purpose and risks of the proposed operation.

(c) It has been held that the consent of the husband to an operation on his wife is not necessary if the operation is necessary to the health and life of the patient and the patient herself consents to it. It is nevertheless advisable to have the spouse join in consent whenever practicable. It is particularly important to do so if the operation involves danger to life or may destroy or limit sex functions or may result in the death of an unborn child. Probably the consent of the husband is not necessary to validate consent given by his wife for an operation on herself that is not necessary for her health but is to be done only for cosmetic purposes. If, however, it is proposed to charge to the husband the cost of a purely cosmetic operation, it will be well to obtain his consent before the operation, so that he cannot later

repudiate his liability on the plea that the operation was not legally a necessity for which his wife was entitled to pledge his credit

(d) If the patient is a minor, authority for an operation must come from his parent or guardian. A man, and in many states a woman also, attains his or her majority on the day preceding his twenty-first birthday. In some states a woman attains her majority on the day preceding her eighteenth birthday. In some, the marriage of a person who is a minor "emancipates" him or her from parental control and may raise a question as to his or her relative rights with respect to an operation in relation to the rights of parents and spouse, but such a question can be settled only by competent legal authority.

(e) If the patient is of unsound mind and incompetent to understand the nature and purpose of the proposed operation and the risks incident to it, authority for the operation must come, (1) if he is a minor, from one or both of his parents, unless a guardian has been appointed for him by the court in which case it must come from his guardian, and, (2) if he has attained his majority, from his legally appointed guardian. Although in the case of a minor of unsound mind the consent of the father may ordinarily be looked on as sufficient, or if the father is dead, the consent of the mother (unless, as has been suggested, the court has appointed a guardian for the minor) it may be well to err on the side of safety and obtain the consent of both father and mother. This is particularly true if there are evidences of any lack of agreement between them as to consent to the operation.

(f) When an immediate operation is imperative, and when the patient's mental state, because of his ordinary mental incompetence or because of acute injury or disease, is such that he cannot rationally consent to a proposed operation, and when such delay as would be necessarily incident to obtaining the consent of the parent or guardian involves serious risk to the patient, an operation may be performed on the basis of the legal theory of implied consent. The law implies in any such case that the patient, if competent, would consent to whatever may be in his own interests. When a surgeon operates under such circumstances, however, he should be prepared to show, if the issue is raised in the course of litigation, (1) that an immediate operation was necessary, (2) that a lawful express consent could not be obtained from the patient or from any person authorized to act for him, without endangering the health or life of the patient, and (3) that the operation performed was only such as was necessary for the patient's welfare.

(g) If the patient who is being operated on has consented only to a specifically limited operation, and if in the course of the operation it becomes necessary for the patient's representative, authorized for that purpose, to give or to refuse consent to an enlarged or different operation, the consent of that representative should be obtained before proceeding beyond the prescribed limits unless an emergency requires the operation to proceed beyond those limits before obtaining consent. Ordinarily, it should be sufficient to obtain the oral consent of the patient's agent for the enlarged or different operation, without delaying the operation, and at the close of the operation obtain that agent's signature to a written consent showing with reasonable certainty the nature and extent of the auxiliary operation authorized by him. If the patient's agent refuses to consent to an auxiliary operation advised by the operating surgeon,

the operation should be brought to an end, unless it would jeopardize the life of the patient to do so. In that case the operating surgeon should assume personal responsibility for proceeding. In any event, the refusal of the patient's agent to consent to the operation, if he does refuse, should be reduced to writing at once.

(h) If the operation to be performed is of minor importance and to be performed without the use of a general anesthetic or of spinal anesthesia, the record of the names and addresses of persons who may properly be notified in event of death or unexpectedly prolonged unconsciousness, called for in paragraph 6 of this blank, may be omitted. It may be omitted, too, if it is already of record in the files or case history or if it is already known to the physician in charge of the case or by the officers of the institution in which the operation is to be performed.

#### *Suggested Form for Consent to Autopsy*

|   |        |     |         |                |
|---|--------|-----|---------|----------------|
| Insert name of hospital   |        |     |         |                |
| State address of hospital   |        |     |         |                |
| No  |        |     |         |                |
| CONSENT TO AUTOPSY  |        |     |         |                |
| Name of deceased  |        |     |         |                |
| Ward  | Bed No |     | Case No |                |
| Age   | years  | Sex | Race    | Marital status |
| Time of death   |        |     |         |                |
|   | Month  | Day | Year    | Hour           |
| 1 I hereby authorize<br>and such person or persons as he may designate, to perform an<br>autopsy on the body described above, being the body of my<br><div style="text-align: right;">I authorize him, too,</div>   |        |     |         |                |
| State relation of signer to deceased  |        |     |         |                |
| to have present at that autopsy such person as he may deem proper   |        |     |         |                |
| 2 I know of no surviving spouse of the deceased and no one<br>of closer kin than I, available to assume the custody of this<br>body and to provide for the disposal of it   |        |     |         |                |
| NOTE.—If this consent blank is to be signed by a surviving spouse,<br>paragraph 2, above should be stricken out   |        |     |         |                |
| 3 The autopsy here authorized may be either a complete<br>autopsy or a partial autopsy and such parts of the body may be<br>removed as may be necessary for study subsequent to the<br>autopsy as in the judgment of the physician by whom it is per-<br>formed may be necessary to accomplish its purpose  |        |     |         |                |
| NOTE.—If the nature and extent of this autopsy or the right to remove<br>parts of the body are to be limited in any way those limitations should<br>be clearly stated below. In the absence of any stated limitations, it is to<br>be understood that the pathologist by whom the operation is performed<br>is to be the sole judge of the nature and extent of the autopsy |        |     |         |                |
| 4 After the autopsy this body should be delivered to  |        |     |         |                |
| Insert name and address of undertaker   |        |     |         |                |
| Date  |        |     |         |                |
| Signature   |        |     |         |                |
| Witness   |        |     |         |                |
| * Street and number   |        |     |         |                |
| * Street and number   |        |     |         |                |
| City and state  |        |     |         |                |
| * State usual place of abode  |        |     |         |                |
| NOTE.—This form of consent should be signed by the surviving spouse<br>if there is any. If there is none, it should be signed by the next of kin.<br>If this form is signed by the surviving spouse paragraph 2 above should<br>be stricken out.  |        |     |         |                |
| For further instructions see the opposite side of this blank  |        |     |         |                |



## AUTOPSY REPORT

Autopsy performed by me \_\_\_\_\_, 19\_\_\_\_  
 Month \_\_\_\_\_ Day \_\_\_\_\_  
 Autopsy No \_\_\_\_\_  
 Signature of pathologist \_\_\_\_\_  
 UNDERTAKER'S RECEIPT FOR BODY  
 Received the body described above this \_\_\_\_\_ day  
 of \_\_\_\_\_, 19\_\_\_\_  
 Signature of undertaker \_\_\_\_\_  
 License or Registration No \_\_\_\_\_  
 \*Witness \_\_\_\_\_  
 Street and number \_\_\_\_\_  
 City and state \_\_\_\_\_

\* The delivery of the body is to be witnessed by some responsible officer of the hospital who will sign here as witness to the undertaker's signature.

## INSTRUCTIONS TO CONSENT TO AUTOPSY

1 The suggested form for consent to autopsy has been prepared primarily for use by hospitals. There is no reason, however, why it should not be used in connection with autopsies outside such institutions. The rules governing consent to autopsies are the same in the two cases.

2 *Form of Consent*—Consent to an autopsy is not required by law to be in writing. The signature of a witness to the signature of the consenting party is not legally necessary when it is in writing. Written consent, however, properly witnessed, is the best safeguard against misunderstanding and facilitates proof of consent.

3 *Casual Custodians of Body*—The person into whose custody the body happens to fall at the time of death must care for it decently and see that it is properly disposed of. If the circumstances of death bring the case within the jurisdiction of the coroner or the medical examiner, that officer should be notified of the circumstances and the body surrendered to that officer on demand. If the circumstances of the death do not bring the body within the jurisdiction of the coroner or the medical examiner, and if the person having custody of it is not the surviving spouse or next of kin, then it must be surrendered to the surviving spouse or next of kin on demand. In any event the body must be so surrendered without mutilation and in the condition in which it was at the time of death, unavoidable natural changes excepted. A casual custodian of a dead body has no authority to mutilate or to consent to its mutilation. If no demand for the body is made, the person having custody of the body—not being the surviving spouse or next of kin—may see to its burial or cremation at the expense of the estate of the deceased, if there is any, or he may surrender the body to the local officers charged with the duty of disposing of unclaimed bodies of dead human beings.

4 *Jurisdiction of Coroner and Medical Examiner*—When death has resulted under circumstances that bring the case within the jurisdiction of the coroner or the medical examiner, the coroner or the medical examiner, as the case may be, is entitled to such custody and control of the body as is necessary to enable him to discharge the functions of his office. In such a case no autopsy should be performed without the express consent of the officer entitled to the custody of the body, until after he has officially released the body to the usual custody of the surviving spouse or kinsfolk. Physicians should bear in mind however that, unless a

coroner or a medical examiner has legal jurisdiction over a dead body, any attempt on his part to authorize an autopsy on that body is without legal effect and does not protect the physician who performs an autopsy under such supposed authority.

5 *Authorization by Will or Antemortem Agreement*—The laws of the several states are not uniform with respect to the right of a person to authorize during his lifetime, by will or otherwise, the performance of an autopsy on his body. If in any case the deceased has authorized such an autopsy and the surviving spouse or next of kin does not acquiesce in its performance, the autopsy had better not be performed without legal advice.

6 *Rights of Spouse and Next of Kin*—Subject to such rights as the coroner or medical examiner may have in a dead body, the right to the custody and control of a dead body vests primarily, in the ordinary course of events, in the surviving spouse, if there is any, and if there is no surviving spouse, then in the next of kin. This rule is subject to exceptions when the conditions of life have separated the deceased from his kinsfolk, but it is impracticable to discuss them here. The surviving spouse or next of kin thus entitled to the custody of a dead body is entitled to receive it in the condition in which it was at the time of death, without post-mortem mutilation, and without change except such as ordinarily occurs in the course of nature.

7 *Relative Rights of Kin*—The next of kin, for purposes of the postmortem custody and disposal of a body, are (1) children of the deceased, (2) parents of the deceased, (3) brothers and sisters of the deceased, (4) uncles and aunts, and (5) other kinsfolk in the order of their closeness of consanguinity. In all the groups of kin named there may be two or more persons equally entitled to the custody and control of the body. The law is not clear as to how the relative rights of the several members of any one of these groups are to be determined. Generally, the rights of a father are presumed to be superior to those of the mother, but by statute this rule has been changed in some jurisdictions, and, fortunately, in most cases parents will act jointly. In cases of kinsfolk, when a choice must be made among several having the same nearness of consanguinity, preference may reasonably be given to the kinsman or kinswoman who has custody of the body and who has assumed the duty of disposing of it. Preference may be given to the kinsman or kinswoman who lives in the state or community over one of an equal degree of consanguinity whose residence is more remote and whose consent cannot be obtained to permit an autopsy to be performed in time to allow the prompt disposal of the body. As between two or more members of a group having the same nearness of kin preference may be given to the one who has attained his majority, over one who has not, and particularly over one who is a minor for whom no guardian has been appointed. In any event, if the next of kin is a minor and it is proposed that he exercise his right of custody and control he can do so only through a duly appointed guardian.

8 *Controversies Among Kinsfolk and Other Interested Parties*—Sometimes there is a known controversy among persons having equal rights to the custody and control of a dead body as to whether an autopsy shall or shall not be done. Under such circumstances a physician or the superintendent of a hospital will do well to consider carefully whether the ends to be obtained by the performance of an autopsy are



sufficient to justify its performance at the risk of a law suit. Even though the authority relied on for the performance of an autopsy may ultimately be shown to be sufficient, a physician or hospital superintendent may have been subjected, before this has been determined, to the annoyance and to the expense of a law suit and may be out of pocket for the amount paid for attorney's fees, or, even worse, a decision may go against him, and he may be out of pocket not only for attorney's fees but also for costs and for damages.

9 Simplicity and certainty of operation will be promoted if, when authority is given for an autopsy, authority is given also for the delivery of the body to some named undertaker.

10 The record of an autopsy may well be closed by entries concerning by whom it was done and when and to whom the body was delivered.

535 North Dearborn Street

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE AND REPORTS

HOWARD A. CARTER, Secretary

### HEAT IN SURGICAL AND ORTHOPEDIC CONDITIONS

A. BRUCE GILL, M.D.  
PHILADELPHIA

As has been pointed out, local application of heat produces relaxation of the tissues, particularly of the voluntary and involuntary muscle fibers, spasm of the skeletal muscles is relieved, the walls of the smaller arteries seem to relax, and the vessels dilate. By reason of these conditions a greater amount of arterial blood flows to the part, bringing oxygen and nutriment. Furthermore, the increased blood flow induced on the venous side carries away in larger degree the products of normal or abnormal metabolism, so that they do not remain as local poisons or irritants but are excreted from the body through natural channels. The heat, as applied from the outside and as conveyed internally to the parts by the rapid arterial flow, accelerates the chemical changes that occur in the tissues.

Numerous conditions occur in various parts of the body in which normal physiologic activity or metabolism is interfered with, as a result of local injury or disease or even as a part of a general "slowing of metabolism" throughout the entire body. If metabolism of the tissues locally becomes permanently lowered, the function of the member or part of the body becomes impaired. With lessened gross mechanical function of the part there is lessened chemical or metabolic activity, because motion or function is a prime factor in the flow of the blood and in the oxidation of the tissues. Thus, a vicious circle may become established.

As a result of local injury there may be hemorrhage, exudation, effusion, swelling, increased pressure or tension and pain. The increased tension narrows the lumen of the veins or completely occludes them and blocks the flow in the lymphatics. Greater swelling, even of distal parts, results. Possibly, as a result of the blocking of venous flow, capillary tension becomes so increased that the capillaries rupture, anemia and even death of tissues may ensue. Later scar tissue forms, and as it contracts it constricts blood vessels and inter-

feres with function of nerves. This grossly disturbs the mechanical function of the member by limiting or abolishing the motion of muscles and their tendons, and of joints, through fibrosis of ligaments and capsule, or by adhesions within the joint.

Immediately following an injury there is an inflammatory reaction with heightened local metabolism and elevation of temperature. This condition is usually treated by rest, elevation, and the application of cooling lotions. But the succeeding subacute and chronic stages with swelling, sluggishness, anemia and lowering of metabolism are to be treated by the application of heat, massage, and passive and active motions carried out in a manner to avoid repetition of traumatism of the structures already injured. To speed up a "lowered local metabolism," to remove the products of hemorrhage and exudates into the tissues or effusions into the joints, and to restore chemical and mechanical function are the objects of treatment.

In the following conditions the application of heat, followed by massage, may be of value. It must be emphasized that the use of heat in surgical conditions is not to be considered alone but only in connection with general surgical principles and that its benefits often are obtainable only by the coincidental use of massage, for which it paves the way.

#### TRAUMATIC CONDITIONS

1 *Fractures*—A simple fracture of the shaft of a long bone, not involving a joint or near a joint and not complicated by a marked and persistent swelling at the site of the fracture or of the extremity distal to the fracture, is to be treated by proper reduction and succeeding immobilization over a time sufficiently long to secure good union. But fractures into or about the joints, such as Colles' fracture or Pott's fracture, accompanied by swelling at the site of the fracture and particularly by swelling of the hand or the foot, should not be treated merely by reduction and efficient splinting in the face of persistent swelling. Healing of the fracture will take place, but the function of the hand or the foot may be largely or completely lost.

All too frequently I have seen severe and disabling fibrous ankylosis of the fingers resulting from Colles' fractures and from other fractures of the upper extremity and even from dislocation of the shoulder. This very serious disability is to be ascribed to prolonged swelling and immobilization of the hand. It is seen much more commonly in adults than in children and is particularly apt to occur in individuals who have an "arthritic tendency." The swelling must be combated immediately, even at times before reduction of the fracture is attempted, by high elevation of the hand and the arm and by oft repeated active motions of the fingers. Gentle kneading and upward stroking massage of the fingers and the hand will assist in reducing and eliminating the swelling. After the reduction of a Colles' fracture a splint should be applied (I prefer a well molded posterior plaster-of-paris splint that extends from the elbow to the knuckles of the hand), which will allow free active and passive movements of the fingers. At the end of a few days, the application of heat, followed by massage, should be instituted. To permit this the bandage should be removed, the hand and arm may lie on the splint and be supported by a pillow, and then a baker is placed over them, or the splint may be removed carefully and the arm placed gently on a pillow for the application of heat. The massage should be given by an experienced and skilful

person who will do nothing that might displace the fragments. There is no danger of such an accident in the hands of a competent physical therapist. If the fracture has been immobilized in a plaster cast, the cast should be split throughout on the two sides so that each half may be removed as splints, reapplied after each treatment, and held in place with a firm bandage. At the end of ten days, gentle passive movements of the wrist should be begun.

In cases of Pott's fracture a similar form of treatment should be followed. In this fracture an absolute reduction of the fracture is vitally important. An anteroposterior roentgenogram should show that the astragalus is accurately placed and centered beneath the tibia. A line drawn upward through the center of the astragalus should, when extended, pass directly through the center of the articular surface of the tibia and upward through the center of the shaft. If this is the case, the fracture has been accurately reduced unless a rotation of the internal malleolus, which is comparatively rare, has occurred. A common disability of the foot that is to be seen after the healing of Pott's fracture has been well reduced is found to be due to stiffness of the ankle and subastragalar joints. Such loss of function and persistent pain may be prevented by applying heat, massage, gentle passive movements of the joints, and fairly early active movements while the site of the fracture is firmly supported by the hands of the physical therapist.

Fractures of the other joints, such as the knee and the elbow, usually require prolonged physical therapy after the fracture has begun to unite in order to restore mobility of the affected joint. Heat, massage and gentle passive movements may usually be begun at the end of two weeks after the fracture and continued as long as necessary or as long as benefit seems to result.

When a fracture of the neck of the femur has been treated by prolonged immobilization in a Whitman cast, the knee frequently becomes stiff as a result of the prolonged swelling of the thigh and the prolonged fixation in the cast. Application of heat, massage, and active and passive movements to the knee are necessary to restore proper function as soon as the cast has been removed. The loss of mobility in the knee may be due to fibrosis occurring in the capsule and the ligaments of the joint or to fibrous tissue, which binds the quadriceps femoris tendon to the femur and prevents its proper excursion. The latter condition may be prevented or lessened in its degree if the patient will jerk the kneecap upward by contracting the quadriceps muscle while the extremity is still in the plaster cast.

At times in cases of fractures of the shaft of the femur the muscles of the thigh become adherent to callus. If this occurs, normal function of the muscle is lessened and normal excursion of the knee joint is prevented. Heat and massage in these cases are indicated to loosen the muscles and to restore their normal function.

It is thus seen that heat and massage are exceedingly useful in many types of fractures, and that this method of treatment must be used only in combination with accepted methods of treating fractures and must be carried out only by physical therapists who are fully competent to care for cases of this type.

**2 Sprains and Dislocations**—Treatment is similar to that of fractures near joints as just described. Splints or casts should be removed and replaced again after the daily treatment by heat and massage. On the whole, fixation by a removable plaster splint and daily

application of heat and massage are to be preferred to strapping with adhesive plaster, which does not permit recourse to physical therapy.

**3 Traumatic Synovitis**—After the first stage of acute inflammation lasting from one day to possibly a week, the secondary stage of absorption of effusion and restoration of function of the joint begins. During this stage, heat and massage are vitally important in aiding these processes.

**4 Contusions and Muscle Sprains**—Similar means of treatment are valuable also in these conditions to secure absorption of the products of hemorrhage, to eliminate swelling and pain, and to secure restoration of function. Collections of blood, if not absorbed, may form cysts or may be infected through the blood stream and become abscesses. It is important, therefore, to secure an early absorption of blood clots and so lessen the amount of scar tissue which forms among the muscle fibers and to permit closer approximation of the ruptured fibers.

A common injury of this type is rupture of some fibers of one or more of the calf muscles. It is my custom to treat this injury by splinting the foot with the heel elevated in order to relax the achilles tendon and to bind the leg with a firm dressing of adhesive plaster to give support to the muscles. The patient is instructed not to bear any weight on the ball of his foot for a period of at least three weeks. At the end of a week, application of heat and massage of the calf muscles are begun.

When a ruptured tendon or muscle has been operated on, heat and massage are essential for several weeks in order to prevent fibrosis and to restore proper movements of the tendons.

Practically all cases of muscle injury are benefited by heat, massage, and active and passive movements at some time or other during the course of recovery.

**5 Volkmann's Contracture**—This is not the place to enter into a full discussion of the etiology and pathology of Volkmann's contracture, but it may be stated emphatically that heat and massage constitute one of the best means available for assisting in the repair of the damage that has been done and to prevent so far as possible the subsequent contractures that result.

**6 Bursitis**—This condition, often seen about the elbow and shoulder joints, for example, and resulting from acute or chronic strain, is susceptible to improvement or cure by heat and massage.

**7 Tenosynovitis**—This condition is seen most commonly in the extensor tendons that move the fingers and the wrist. Occasionally a tenosynovitis of the achilles tendon is observed. It must be treated by splinting to immobilize the tendons, by applying heat and massage, begun as soon as the acute inflammatory reaction has subsided and continued as long as any symptoms of crepitation, pain and weakness persist.

#### INFLAMMATORY CONDITIONS

During the acute stage of inflammatory conditions of joints and bursae, the application of heat may be more harmful than beneficial, although acute bursitis may be favorably influenced by diathermy. The duration of the primary stage depends largely, of course, on the kind and virulence of any infection that may be present. An infection of a joint may produce a simple synovitis, a plastic arthritis or a severe purulent arthritis, and the course and duration of the disease may vary greatly. In general, it may be said that for these conditions heat and massage are usually begun



given and that there had been no evidence of any tendency for sparks to pass through the protecting pads

The submitted report was confirmed in a clinic acceptable to the Council

In view of the foregoing report the Council voted to include the Hogan Brevatherm Short Wave Diathermy in its list of accepted devices

### ROSE CW SHORT WAVE DIATHERM ACCEPTABLE

Manufacturer E J Rose Manufacturing Company, Los Angeles

This unit is recommended by the manufacturer for medical diathermy and for electrosurgery. It is a conventional two-tube oscillator, push-pull type of circuit modified for physical therapeutic purposes. The patient's circuit is capacitatively coupled to the oscillator. The milliammeter, like that on other short wave machines does not indicate the actual current through the patient but serves to indicate relative power and also to determine whether the unit is in resonance.

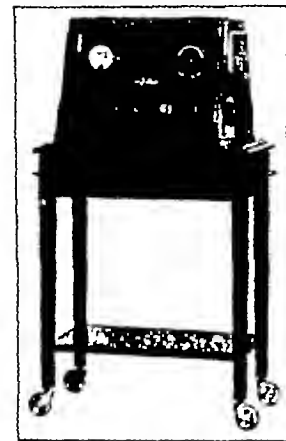


Fig. 1—Rose CW Short Wave Diathermy

The wavelength is about 164 meters and the input power about 540 watts. Since there is no acceptable method for measuring the output power of diathermy machines, this value is not stated. The shipping weight of the standard unit is about 80 pounds. Figure 2 is a schematic diagram of the circuit.

Tissue heating ability of the machine was investigated in a clinic acceptable to the Council. Cuff electrodes, about 5 by 50 cm, were used, being separated from the patient's skin by layers of felt.

Thermocouples were introduced into the subcutaneous and deep-lying tissues (quadriceps extensor) of the human thigh. Operating the machine at the patient's tolerance, the temperature rise (average of eight tests) was observed at the beginning and at the end of twenty-minute periods the thermocouples being removed during the application of the diathermy current. According to the results submitted, the temperature rise of the deep-lying tissues of the thigh was higher than

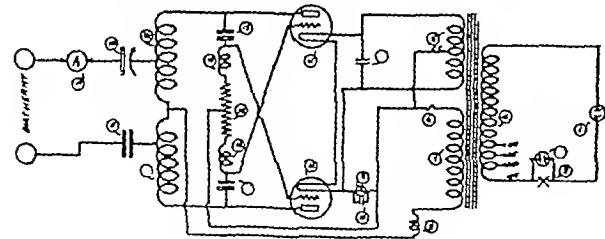


Fig. 2—Schematic diagram of the circuit

that obtained when conventional diathermy was used—the criterion for evaluating short wave machines which the Council has adopted.

The investigator who tested the machine in a clinic acceptable to the Council reported that it supplied sufficient energy to heat the body tissues whenever such treatment is indicated. Burns may be produced by this machine but they may be avoided by ordinary precaution their likelihood to occur is much less than with conventional diathermy.

In view of the favorable clinical performance of this machine when cuff electrodes are employed, the Council on Physical Therapy voted to include the Rose CW Short Wave Diathermy in its list of accepted apparatus.

## Committee on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

### CELLU STRAWBERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Eugene Fruit Growers Association, Eugene, Ore.

Description—Canned cooked strawberries packed in water without added sugar or salt.

Manufacture—Ripe strawberries are stemmed by hand, spray washed, graded according to size sorted (defective fruit and foreign material are removed), again spray washed, filled into cans and covered with water. The treatment thereafter is the same as for Cellu Blackberries Packed in Water Without Added Sugar or Salt (THE JOURNAL, Sept 28, 1935, p 1039).

Analysis (submitted by distributor) —

|  | per cent |
|--|----------|
| Moisture   | 91.1     |
| Total solids   | 8.9      |
| Ash  | 0.5      |
| Fat (ether extract)                                  | 0.6      |
| Protein (N X 6.25)                                   | 0.9      |
| Reducing sugars as invert sugar                      | 4.8      |
| Sucrose  | 0.4      |
| Crude fiber  | 1.3      |
| Carbohydrates other than crude fiber (by difference) | 5.6      |

Calories—0.3 per gram 9 per ounce

Claims of Distributor—For diets in which sweetened fruit is proscribed

- (1) GRIDLEY BUTTERSCOTCH ICE CREAM
- (2) GRIDLEY FRUIT SALAD ICE CREAM
- (3) GRIDLEY NESSELRODE PUDDING
- (4) GRIDLEY NEW YORK ICE CREAM
- (5) GRIDLEY NUT TOFFEE ICE CREAM

Manufacturer—Gridley Dairy Company, Inc., Milwaukee

Description—(1) Basic Vanilla Ice Cream Mix (THE JOURNAL Sept. 7, 1935, p 801) flavored with butterscotch confection prepared from corn syrup, cream (18 per cent) and butter.

(2) Basic Vanilla Ice Cream Mix with either fresh or frozen strawberries, cherries, crushed pineapple, peaches and bananas.

(3) Basic Vanilla Ice Cream Mix with a mixture of figs artificially colored glaze (sugared) Royal Anne cherries, glaze (sugared) pineapple, ground almond macaroons, walnuts and pecans, California sherry wine and Jamaica rum.

(4) Basic Vanilla Ice Cream Mix with additional egg yolk and cream (18 per cent).

(5) Basic Vanilla Ice Cream Mix with a crushed toffee confection prepared from sugar, butter and almonds or pecans.

Manufacture—The method of preparation, freezing and packaging is the same as described for Gridley Fast Frozen Ice Cream (THE JOURNAL, Sept. 7, 1935 p 801).

Analysis (submitted by manufacturer) —

|                        | Fat Content per cent |
|------------------------|----------------------|
| Butterscotch Ice Cream | 14.5                 |
| Fruit Salad Ice Cream  | 12.0                 |
| Nesselrode Pudding     | 12.0                 |
| New York Ice Cream     | 15.0                 |
| Nut Toffee Ice Cream   | 13.5                 |

### DROMEDARY BRAND GRAPEFRUIT (UNSWEETENED)

Manufacturer—The Hills Brothers Company, New York

Description—Canned Florida grapefruit segments unsweetened. The method of manufacture is essentially the same as described for Dromedary Finest Florida Grapefruit (Sweetened) (THE JOURNAL, July 25 1931 p 248).

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 4, 1936

## OBESITY

Few conditions induce as much chronic psychologic and physical invalidity as obesity. In borderline cases what constitutes excessive accumulation of depot fat is partly decided by individual taste and partly by the dictates of fashion.

The energy requirement of the body, according to a discussion by Lambie,<sup>1</sup> is the amount of energy necessary to cover the basal metabolism, the bodily activity and the specific dynamic action of food. It is the balance of the sum of these against the intake of fat sources that in the majority of instances directs the storage of fat in the body. The factor of greatest magnitude on the expenditure side is the basal metabolism. True, obesity is compatible in spite of this fact with lowered, normal or increased metabolism. The amount of energy consumed in exercise is relatively small, a man weighing 70 Kg., in an hour's walk covering 2½ miles, would require only 140 calories, or approximately the amount of energy contained in a slice of bread.

A further possible source of abnormality lies in the intermediary metabolism. There is no evidence that the obese exhibit any specific inability to burn either fat or carbohydrate. But increased storage might be due to some abnormality referable to the fatty tissues themselves or it might be caused by some disorder of intermediary metabolism leading to increased formation of fat from other foodstuffs. If it could thus be shown that the essential peculiarity of metabolism in obesity is an excessive conversion of carbohydrate into fat, a relatively simple explanation of many of the facts about the disease would be demonstrated. The processes of glycogen formation and the conversion of carbohydrate into fat seem to be linked together in some way, but the exact nature of the underlying mechanism responsible for this interconnection is unknown.

Special aspects of the metabolism in obesity have been many times investigated. An example is the sugar tolerance of obese subjects, a recent study of which has

been made by Ogilvie.<sup>2</sup> He found that in sixty-five obese subjects (all women but two), ranging in age from 23 to 65 and in percentage overweight from 14 to 137, the sugar tolerance diminishes as the duration of the obesity increases. In about one third of the obese subjects there is a preliminary phase of increased sugar tolerance, but in the majority of cases tolerance is normal even at first. The normal tolerance gives way later to deficient tolerance, the ultimate expression of which is diabetes. The associated hypertrophy of the islets of Langerhans that occurs in some of the subjects is probably directed toward maintaining a normal level of insulin secretion as long as possible. Furthermore, no evidence was obtained from these studies that the sugar tolerance was related to the degree of overweight. Some decrease in tolerance was seen, however, in advancing years and a relation was observed between sugar tolerance in these subjects and ovarian function. In general these conclusions corroborate others. Lambie, however, in discussing the same subject, states that evidence is gradually accumulating which points to some forms of glycosuria, particularly those associated with obesity, being due to causes outside the pancreas and possibly referable to functional disturbances of endocrine activity similar to those which occur in posterior pituitary basophilism. It is suggested, therefore, that the essential change in intermediary metabolism underlying a large group of obesities is to be traced to a disturbance of hepatic function whereby glycogen is laid down and carbohydrate is converted into a fat with excessive ease.

Another metabolic aspect has been investigated recently by Poin Dexter and Bruger.<sup>3</sup> In thirty subjects, chosen at random from an original group of ninety-four, a low caloric diet was given and the body weight and plasma cholesterol were determined at more or less regular intervals for from six to sixty weeks. Statistical analysis was difficult for several reasons. The authors concluded, however, that the cholesterol content of the plasma in uncomplicated obesity and in obesity complicated by metabolic, arthritic or endocrine disease is not altered primarily by reduction in weight with a low caloric diet. At times the initial high plasma cholesterol content of the obese patient with complicating degenerative disease may show a significant decrease following reduction of weight on a low caloric diet. It seems to be due not to a diminution in body weight but secondarily to changes in the clinical condition of the patient. In some subjects the institution of low caloric diets is accompanied by a definite increase in the amount of plasma cholesterol for two or three weeks. This increase, it is assumed, represents the so-called starvation effect, which has been recorded previously in man and animals.

<sup>2</sup> Ogilvie, R. F. Sugar Tolerance in Obese Subjects, *Quart. J. Med.* 4: 345 (Oct.) 1935.

<sup>3</sup> Poin Dexter, C. A. and Bruger, Maurice. Effect of Low Caloric Diets and Resultant Loss in Weight on Plasma Cholesterol in the Obese. *Arch. Int. Med.* 56: 884 (Nov.) 1935.

<sup>1</sup> Lambie, C. G. Obesity. *Etiology and Metabolism*. *Lancet* 2: 885 (Nov. 9) 1935.

The integration of this and other information is still far from complete, but important additional knowledge of the direct and intermediate metabolism will undoubtedly soon be available. The present status of the etiology of obesity has been admirably summed up by Lambie, who classifies the causes as developmental, metabolic or nutritional. "Metabolic obesity may be endocrine, neurogenic or neuro-endocrine in origin. The developmental group would be wholly hereditary, the nutritional group wholly acquired, while the metabolic group might be either hereditary or due to acquired disease. In all varieties such variables as food intake and exercise play a part, although in the nutritional group they are primary factors, while the influence of heredity is suggested by the fact that some 70 per cent of the subjects of obesity have overweight parents."

#### CHEMICAL MODIFICATION OF SPECIES DIFFERENCES IN THE PITUITARY

Among the factors requiring careful evaluation in endocrine research, species variability is one of the most important. Different animals may vary greatly in their response to an endocrine principle, and an extract derived from an organ of one species may produce a different effect in a test animal from that produced by an extract of a homologous organ of another species. Much confusion exists because of failure in many instances to recognize this source of error. This is perhaps best exemplified in the recent contributions to the physiology of the pituitary and the gonads.<sup>1</sup> Clinical applications of animal experiments have been made in the expectation that the human being would respond in the same manner as the animal in which a particular extract was assayed. That this is by no means always the case is now attested by much evidence.<sup>2</sup> Conversely, similar extracts derived from different species are often used interchangeably, but the effects in an individual are not always concordant. Another source of difficulty arises from chemical modification of endocrine principles by reagents used for extraction or purification.

An important contribution to this problem has recently been made by Leo Loeb and his associates<sup>2</sup> at Washington University. Using the immature guinea-pig as a test animal, they noted the different effects on ovary and thyroid following implantation of anterior pituitaries from a number of mammalian species. Anterior hypophyses treated with one of a series of chemical agents were then implanted and the effects determined. The St. Louis investigators were able by this means "to change experimentally the preponderance of the various effects, which the anterior pituitary glands of [the] different species exert, after implanta-

tion into the guinea-pig and to make the action of the gland of one species like that of another species."

The ovary of the immature guinea-pig responds to pituitary implantation by one or more of several reactions of which the histologic details are too complex for complete description here. Briefly, these consist in growth and maturation of follicles, leading in some cases to rupture and formation of corpora lutea, destruction (atresia) of follicles, and luteinization of varying degree (which Loeb divides into two types). The anterior pituitary of cattle, pig or sheep produces atresia of follicles and also leads to marked hypertrophy of the thyroid. That of the guinea-pig produces follicular maturation and little or no stimulation of the thyroid. The gland of rabbit, rat or cat induces follicular maturation and luteinization with moderate thyroid hypertrophy. The human anterior hypophysis (obtained at necropsy) has an effect similar to that of the latter group but causes a more marked thyroid reaction.

Following immersion of pituitaries of cattle, pigs and sheep for a period usually of from three to seven days under sterile conditions, in one of several different mediums (water, physiologic solution of sodium chloride, alcohol, ether, glycerin, dilute solution of formaldehyde), injury of follicles no longer occurred on implantation. "Pieces of cattle gland, thus deprived of their typical effects, act now on ovary and thyroid essentially like the anterior pituitary of one of the other species, the character of these changes varies in accordance with the nature of the solution to which the gland has been exposed." Curiously enough, while alcohol abolished the action of the follicle-injuring substance in the cattle pituitary on subsequent implantation, alkaline extracts of treated pituitary tissue still produced follicular atresia, thus demonstrating that the original substance had not been irretrievably destroyed or removed from the gland.

Treatment of human or cattle anterior pituitary with 0.5 or 1 per cent solution of formaldehyde, for a suitable period, abolished or greatly diminished the luteinizing and thyrotropic effects but did not reduce the effect on follicular growth and maturation. Conversely, immersion in water, salt solution or glycerin led to accentuation of the luteinizing effect and diminution in the effect on follicular growth and maturation without abolishing the thyrotropic activity. Changing the solutions or the time of immersion modified the effects in still other ways.

Loeb and his collaborators suggest that "the data obtained may be interpreted by assuming that the effect of these various hormones depends on the presence of certain amino acids, which form part of one or several polypeptid or protein molecules."

These fundamental studies, which are of great importance in the elucidation of pituitary physiology, illustrate the exceeding complexity of basic problems in endocrinology.

<sup>1</sup> *Glandular Physiology and Therapy*. Chicago: American Medical Association, 1935.

<sup>2</sup> Loeb, Leo, Anderson W. C., Saxton John, Hayward S. J. and Kuppen A. A. Experimental Dissociation of the Effects of Anterior Pituitary Glands of Various Species on Thyroid and Ovary. *Science* 82: 331 (Oct. 4) 1935.



## CERTAIN SPECIFIC AND NONSPECIFIC SKIN REACTIONS

Reactions superficially more or less like the focal reactions in certain infectious diseases may develop under other conditions. Thus on the reinjection of therapeutic serum an acute reaction may develop at the site of the previous injection.<sup>1</sup> It would seem that the cells at the point of the first injection have been changed in some way so that they react sharply with substances absorbed from the second injection. The Schwartzman phenomenon is at least somewhat analogous. This phenomenon has been studied extensively in experiments on rabbits and other animals by Schwartzman<sup>2</sup> and others. As originally observed, it concerns a hemorrhagic and necrotic process at the site of a primary intradermal injection of a bacterial filtrate when followed in twenty-four hours or so by the intravenous injection of a different filtrate. Here the primary injection so changes the condition at its site that a sharp local reaction develops when a different material is introduced into the blood. The element of specificity is apparently absent, although the reaction also occurs in a seemingly specific way when the second injection is made with the same material as the first, e. g., vaccine virus. In certain infectious diseases, local reactions may occur which at least superficially resemble the reactions just mentioned. In measles,<sup>3</sup> for instance, redness may develop at the points of previous injections of scarlet fever toxin in testing for susceptibility to scarlet fever (Dick test). Similar reactions may develop in scarlet fever in patients previously subjected to Dick tests.<sup>4</sup> This phenomenon might be spoken of as non-specific in the case of measles and as specific in the case of scarlet fever, but in both cases it obviously indicates an acquired sensitiveness of the sites of the Dick tests.

Possibly diverse cutaneous phenomena as well as processes in internal organs and tissues are of similar nature to the reactions described. Here it may be of interest to mention the development on revaccination of typical vaccinia at the point of a reactionless previous insertion of the virus. Buniva<sup>5</sup> described this phenomenon vividly in 1804. "We have also observed that when the period of latency is too prolonged and a second vaccination is done with the idea that the first was done in vain, this second operation activates the first punctures in such a way that they become inflamed and run through the whole course of the vaccination a little more rapidly." The second vaccination more or less remote from the first awakens activity at a seemingly reactionless insertion of the virus. This would

be classed as a specific phenomenon. There seems to be no record of any nonspecific activation of this kind in so-called delayed vaccinia and in recurrence or relapse of vaccinia. These unusual reactions of vaccinia seem to depend on specific interactions between the virus and the effects of sensitization or allergy.

Recently Wassen<sup>6</sup> described a reaction in experimental human inguinal lymphogranuloma that illustrates this point. The subcutaneous deposition of the specific antigen caused no reaction soon after the infection, but later as cutaneous allergy became established typical Frey reactions developed about the deposit.

Reactions like those mentioned may differ qualitatively as well as quantitatively, but they have two main factors in common, namely, the introduction or presence of foreign material in the previously infected or sensitized body. As shown by the Schwartzman reaction and by the reaction in measles at the point of injection of scarlet fever toxin, this sensitization or preparation need not be specific in the usual immunologic or allergic sense.

## Current Comment

### PHYSICAL CONDITION AND UNEMPLOYMENT

In his speech delivered in Atlanta, Nov. 29, 1935, President Roosevelt said "National surveys prove that the average citizenship of today lives on what would be called by the medical fraternity a third class diet." This is significant in view of the importance of adequate food supply and nutrition in the prevention of disease. During the depression years the undernutrition resulting from unemployment and difficult economic conditions has contributed to a considerable extent to rendering the human organism more susceptible to the ravages of disease. A close relationship exists between unemployment and physical condition, a relationship in which the former is usually looked on as an important contributing factor to the latter. Nevertheless, in many instances the existence or development of poor physical condition has contributed to resulting unemployment. An informative survey<sup>1</sup> of this relationship has been published by the Employment Stabilization Research Institute of the University of Minnesota. Individuals associated with this project have conducted physical, psychological and sociological examinations of large numbers of unemployed persons in Minneapolis, St. Paul and Duluth. Although the physical condition of these unemployed individuals was rarely, if ever, considered when they lost their jobs, the great prevalence of physical defects among them raised the question as to a possible relationship between physical handicaps and unemployment. The existence of such a relationship might obviously be based on several facts: physical handicaps reduce efficiency and thereby contribute to unemployment, lack of employment may predispose to

1 Dienes L. L. and Simon F. A. The Flaring Up of Injection Sites in Allergic Guinea Pigs. *J. Immunol.* 28: 321 (April) 1935.

2 Schwartzman Gregory. Studies on Bacillus Typhosus Toxin Substances. I. Phenomenon of Local Skin Reactivity to B. Typhosus Culture Filtrate. *J. Exper. Med.* 48: 247 (Aug.) 1928.

3 Ferry N. L. Reappearance of Reaction at Site of Previous Dick Test Coincident with Appearance of Measles Rash in a Case of Measles. *J. A. M. A.* 87: 241 (July 24) 1926.

4 Toomey J. A. Reappearance of a Positive Dick Test. *J. A. M. A.* 87: 941 (Sept. 18) 1926.

5 Istruzione intorno alla vaccinazione preceduta da un discorso storico sulla sua utilità di Michele Buniva. Turin, 1804.

6 Wassen E. Studies of Lymphogranuloma Inguinale from Etiologic and Immunologic Points of View. *Acta path. et microbiol. Scandinarv.* suppl. 23 1935.

1 Diehl H. S. Physical Condition and Unemployment. *Pub. Health Rep.* 50: 1610 (Nov. 15) 1935.

certain physical defects and make it impossible to have them corrected, or the individual who neglects physical defects may possibly be careless and inefficient in other things. Although generalizations are difficult in this type of survey, a careful study of the age, height and weight, physical classifications, physical defects and diseases of the large group of individuals revealed several definite facts. Persons who are in good health and who keep themselves as free as possible from physical handicaps are less likely to suffer unemployment than individuals who are handicapped by physical defects. Furthermore, and of considerable importance, employers might expect greater efficiency from their employees if provisions were made to discover and correct their physical handicaps and keep them in better general health. The study of the physical data indicates the great possibility of increasing individual health, efficiency and happiness by the prevention or correction of physical handicaps in the employed as well as the unemployed groups.

## Association News

### RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of Medical Emergencies and How They Are Met. The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

**Red Network**—The stations on the Red network of the National Broadcasting Company are WEAF, WEEI, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

**Pacific Network**—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ.

The next three programs are as follows:

January 7 Infantile Paralysis Morris Fishbein M.D.  
January 14 Diphtheria W. W. Bauer M.D.  
January 21 Scarlet Fever Morris Fishbein M.D.

This program is broadcast occasionally on the short waves through KDKA, Pittsburgh, over station WSAK, 11,870 and 12,210 kilocycles.

## THE KANSAS CITY SESSION

### Special Topics for the Scientific Exhibit

Several special topics will be considered in the Scientific Exhibit at the Kansas City session. The Section on Pediatrics will devote space to a group of exhibits on the subject of nutrition under the guidance of Dr. F. Thomas Mitchell, Memphis, Tenn., while the Section on Dermatology and Syphilology will present a group of exhibits on tuberculosis of the skin under a committee headed by Dr. Clark W. Finnerud, Chicago.

A symposium composed of a group of exhibits by different individuals will be presented on traffic accidents stressing especially the medical side of the subject. It is contemplated taking

up the prevention as well as treatment, including influence of fatigue and alcohol, vision and hearing, reaction times and psychiatric tests.

Applications for space close January 27. Application blanks may be obtained by addressing a request to the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### ARKANSAS

**District Meetings**—The Sixth Councilor District Medical Society met in DeQueen, December 10, under the presidency of Dr. Albert S. Buchanan, Prescott. Dr. Curt O. von Wedel, Jr., Oklahoma City, discussed "Common Injuries to the Face." Drs. William A. Hutchinson, Texarkana, "Importance of Pre-operative Treatment"; Robert L. Hopkins, DeQueen, "Management of Pelvic Infection"; Hugh E. Longino, Texarkana, "The Cystoscope, Its Value and Limitations," and George B. Fletcher, Hot Springs National Park, "Menopausal Changes." The Ninth Councilor District Medical Society was addressed in Harrison, December 3, among others, by Drs. Sidney J. Wolfermann, Fort Smith, on "Diagnostic Significance of Jaundice" and William A. Snodgrass, Little Rock, "Ectopic Pregnancy."

### CALIFORNIA

**Dr. Meyer Ill with Psittacosis**—Karl F. Meyer, Ph.D., director of the Hooper Foundation for Medical Research of the University of California, San Francisco, has been ill with psittacosis for two months, the *New York Times* reported, December 27. Dr. Meyer contracted the disease in the course of laboratory experiments. It was also said that Dr. Jacob C. Geiger, health officer of San Francisco, had suffered an attack but had recovered.

**Popular Medical Lectures**—The fifty-fourth course of popular medical lectures of Stanford University School of Medicine, San Francisco, opened at Lane Hall, January 3, with Dr. Edward C. Sewall as the lecturer. His subject was "Sinusitis, Allergy and the Common Cold." Other speakers in the series will be:

Dr. Thomas Henshaw Kelly, January 17, Public Patient Physician and Health Insurance.  
Dr. C. Frederic Fluhmann, January 31, Superstitions, Facts and Theories of Menstruation.  
Dr. George H. Becker, February 14, Success of Control of Communicable Diseases in San Francisco.  
Dr. Albert D. Davis, February 28, Value and Limitations of Plastic Operative Procedures.  
Dr. Thomas G. Inman, March 13, Present Conceptions of the Nature of Mind.

### CONNECTICUT

**Cancer Study**—The Connecticut State Department of Health will soon begin a study of the mortality and the prevention and treatment of cancer in accordance with an act passed by the last legislature at the recommendation of the state medical society. The bureau of preventable diseases will carry on the study, and Mr. Herbert F. Hirsche has been appointed research statistician for the work.

**Annual Registration Due During January**—Every practitioner of medicine and surgery holding a license to practice in Connecticut is required by law to register during January, with the state department of health, and at that time to pay a fee of \$2. Licentuates who have retired from active practice or who live out of the state must register annually but need not pay a fee. A practitioner failing to register is liable to a fine of not more than \$5.

### FLORIDA

**Dr. McPhaul Named State Health Officer**—Dr. Wilbur A. McPhaul, Pensacola, was appointed state health officer December 5 to succeed Dr. Henry Hanson, whose term expired in 1933. Since that time Dr. Hanson had been acting executive officer. Dr. McPhaul graduated from the University of Nashville Medical Department in 1904, and from 1907 to 1911 served as part time health officer of Robeson County. He returned to the private practice of medicine until 1916, when he became full time health officer of Robeson County. In 1919 he was

director of rural sanitation work with the Alabama State Board of Health, becoming in the same year health officer of Montgomery. In 1920 he was appointed health officer of Charlotte, N. C. This position he resigned in 1931 to become a field director of the U. S. Public Health Service. He has been health officer of Pensacola since the organization of the department in 1932.

### GEORGIA

**Society News**—At a meeting of the Fulton County Medical Society, November 21, in Atlanta, speakers included Drs. Hal M. Davison, Mason I. Lowance and Crawford F. Barnett Jr. who discussed 'Use of Calcium and Vitamin Concentrates in Prevention of Colds'.—The Richmond County Medical Society was addressed in Augusta recently by Dr. Harry T. Harper Jr., Augusta, on heart disease.—At a meeting of the Dugas Journal Club of the University of Georgia School of Medicine, November 14, Drs. Virgil P. W. Sidenstricker and Edward S. Armstrong, Augusta, presented a paper on "Pelagra, Statistical and Etiological Aspects". Dr. Harry T. Harper Jr., Augusta, read a paper on "Intravenous Use of Mercurochrome and Gentian Violet".—Dr. Lewis D. Hoppe Jr., Atlanta, was chosen president of the Fulton County Pediatric Society at a recent meeting in Atlanta. Speakers at the meeting included Dr. James A. Wood, Atlanta, on 'Thyroid Dysfunction in Children'.

### IDAHO

**Dr. Dunshee Named Medical Adviser**—Dr. Jay D. Dunshee, formerly health director of California, has been appointed medical adviser of Idaho, effective December 15. The establishment of this office was made possible by an appropriation from the Rockefeller Foundation, which has agreed to match funds for this purpose set aside at the recent legislative session. Dr. Dunshee was health officer of Pasadena from 1929 to 1934 when he became director of health of the California State Department of Health. He resigned from the latter position in 1935. Previously he had been for seven years director of the division of child hygiene of the Los Angeles County Health Department.

### ILLINOIS

**Scarlet Fever Closes Schools**—Because of a threatened outbreak of scarlet fever, schools were closed in Osco and Christmas programs and public meetings were canceled, newspapers reported, December 19. According to a report from the state health department December 18, scarlet fever was responsible for 1,500 Christmas Day quarantines throughout Illinois.

**Society News**—Dr. Harold C. Voris, Chicago, discussed "Surgery of the Sympathetic Nervous System" before the Fulton County Medical Society in Canton, December 18.—At a meeting of the Rock River Valley Eye, Ear, Nose and Throat Society at Rockford December 17, Dr. Robert Sonnenschein, Chicago, talked on "Functional Hearing Tests and Their Bearing on the Diagnosis and Treatment of Nonsuppurative Middle Ear Disease".—Dr. Leon Unger, Chicago, discussed allergy before the Lake County Medical Society, December 10.

### Chicago

**Dr. Novak Will Give Bacon Lectures**—Dr. Emil Novak, associate in gynecology, Johns Hopkins University School of Medicine, Baltimore, will deliver the annual Bacon lectures at the University of Illinois College of Medicine, January 8-9. The titles of the lectures have not been announced, but the general subject is gynecology.

**Dr. Kasanin Heads Department of Psychiatry at Michael Reese**—Dr. Jacob Kasanin, clinical director of the Rhode Island State Hospital for Mental Diseases, Howard R. I., has been appointed head of the department of psychiatry of Michael Reese Hospital. Dr. Kasanin is 38 years of age and graduated from the University of Michigan School of Medicine, Ann Arbor, in 1921. In 1927 he was placed in charge of a new department of mental hygiene of the Federated Jewish Charities of Boston, in 1929 he became a member of the research staff of the Massachusetts Society for Mental Hygiene, and in 1932 he went to the Rhode Island State Hospital, where his resignation became effective January 2. In 1933 he shared a prize awarded by the New England Society of Psychiatry for a paper written jointly with Zitha A. Rosen, Howard, R. I., entitled "A Study of Clinical Variables in So Called Schizoid Personalities".

**Personal**—Dr. Jacob P. Greenhill, recently appointed head of the department of obstetrics of the American Hospital, has resigned because of the pressure of other duties. Dr. Greenhill

was recently promoted to professor of gynecology at Loyola University School of Medicine.—Dr. Louis Rudolph has been appointed associate professor of obstetrics at Loyola University School of Medicine. William C. Austin, Ph.D., since 1924 head of the department of physiologic chemistry at Loyola, died, November 20, aged 40.—Dr. William H. Walsh has been appointed as a special consultant to study the hospital needs in connection with the Institute of Tropical Medicine in San Juan, Puerto Rico.—Dr. Robert A. Black has been appointed a member of the board of health, succeeding Edmund O. Jordan, Ph.D., who resigned because of ill health.—Dr. Maurice J. Rubel was awarded the Cross of the Legion of Honor in recognition of his service to the French people, December 15. M. René Weiller, French consul, made the presentation.

**Society News**—The Chicago Pathological Society was addressed among others December 9, by Drs. James P. Simonds on "Chronic Thrombosis of the Portal Vein," and Nathan S. Davis III, "Atherosclerosis and Resulting Pathology in 1,000 Consecutive Necropsies".—Speakers before the Chicago Surgical Society, December 13, included Dr. Arthur Dean Bryan on present status of appendicitis and Dr. Frederick Christopher, Evanston, perforated ulcer of Meckel's diverticulum.—Among others, Dr. Phillips Thygeson, Iowa City, addressed the Chicago Ophthalmological Society, December 16, on "Etiology of Trachoma and Inclusion Blepharitis".—Dr. Otto H. Schwarz, St. Louis, addressed a joint meeting of the Englewood and Stock Yards branches of the Chicago Medical Society, December 3, on "Metabolism of Pregnancy".—At a meeting of the Chicago Society of Internal Medicine November 25, speakers included Dr. Paul C. Bucy on "Carotid Sinus Nerve in Man".—The Chicago Pediatric Society was addressed November 26, by Drs. Edward A. Oliver on "Dermatologic Problems Encountered in the Practice of Pediatrics" and Ruben Nomland, "Congenital Malformations of the Skin, Including Nevus Diagnosis and Treatment".—At a meeting of the Chicago Orthopaedic Society, December 6, speakers were Drs. Marcus H. Hobart, Evanston, Ill., on "Manipulative Treatment of Coccygodynia" and Frederick C. Kidner, Detroit, "Cavernous Angioma of the Lower Extremity".—Dr. Claude S. Beck, Cleveland, discussed "Establishment of a New Blood Supply to the Heart by Operation" and "Acute and Chronic Compression of the Heart" before the Chicago Medical Society, December 4.—A special laboratory demonstration of cochlear action potentials was held at the meeting of the Chicago Laryngological and Otological Society, December 2, by Dr. Ralph W. Gerard and H. Dubner of the department of physiology, University of Chicago. Speakers included Dr. Melvin Reese Guttman on "Primary Adenocystic Carcinoma or Cylindroma of the Trachea".—The Chicago Urological Society was addressed, November 21, by Drs. Harry C. Rolnick on "Retrovesical Sarcoma", Joseph Welfeld and Louis R. Hill, "Rhabdomyosarcoma of the Urinary Bladder in a Young Child", and Edward William White and Reuben B. Games, "Genital Tuberculosis," with case report.

### KENTUCKY

**Society News**—Dr. Ernest B. Bradley, Lexington, among others, addressed the Bourbon County Medical Society, Paris, recently on "Evaluation of Methods of Treatment of Pulmonary Tuberculosis".—Dr. Esmond R. Long, Philadelphia, addressed the Jefferson County Medical Society, December 2, under the auspices of the Louisville Tuberculosis Association, on "Constitutional and Acquired Factors in Resistance to Tuberculosis."

### MAINE

**Society News**—Dr. Erastus E. Holt Jr., Portland, addressed the Portland Medical Club, recently, on the management of cross eyes.—A symposium on fractures was recently presented before the Kennebec County Medical Association by Drs. Ivan E. McLaughlin, Gardner, and Henry W. Lamb, Portland. A joint meeting with the Kennebec County Dental Association was addressed in Waterville November 21, among others by Dr. Blynn O. Goodrich on "Syphilis of Pharynx" and Percy Butterfield, D.D.S., Togus, "Relation of Dentistry to Medicine".—Dr. Siegfried Thannhauser, Boston, addressed the Oxford County Medical Society in Bethel, recently, on "Liver Function Tests and the Dietary Treatment of Liver Diseases".—At a meeting of the Penobscot County Medical Society, recently, Drs. Charles L. Swan Jr. and Jack Spencer, both of Boston, spoke on "Cancer of the Uterus" and "Diagnosis of Bone Tumors," respectively.—Dr. Arthur Paul Wakefield, Fairfield, discussed tuberculosis at a meeting of the Piscataquis County Medical Society recently.—The York County Medical Society was addressed at Marshview, Dunstan, in

November, by Dr Harold V Bickmore, Portland on gall-bladder disease. Dr Timothy J O'Sullivan, Portland, showed motion pictures of operations on the head and neck.

## MARYLAND

**De Lamar Lectures**—Dr Milton J Rosenau formerly Charles Wilder professor of preventive medicine and hygiene, Harvard Medical School, Boston gave three public lectures on "Epidemics," in the De Lamar series in hygiene at the Johns Hopkins University School of Hygiene and Public Health, December 10-12.

**Marburg Fund Established at Johns Hopkins**—The Annie G Marburg Memorial Fund will be established at Johns Hopkins Hospital, Baltimore, under a bequest of \$900,000 in the will of Albert Marburg, who died December 9. The will also gives \$50,000 to Princeton University to set up 'The Albert Marburg Memorial Fund' and \$50,000 to the Union Memorial Hospital Baltimore, to endow a room to be known as "William A Marburg Memorial" in memory of a son. The fund at Johns Hopkins Hospital is in memory of Mr Marburg's wife.

## MASSACHUSETTS

**Dr Fitz Named Professor of Medicine**—Dr Reginald Fitz, since 1922 associate professor of medicine, Harvard University Medical School, has been appointed professor of medicine in the Boston University School of Medicine and director of the Robert Dawson Evans Memorial the department of clinical research and preventive medicine of the Massachusetts Memorial Hospitals. In the latter position Dr Fitz will succeed Dr Henry M Pollock who has been director, and the late Allan Winter Rowe, Ph D, director of research. Dr Fitz graduated from Harvard in 1909, and served on the staffs of Massachusetts General Hospital, Peter Bent Brigham Hospital, Johns Hopkins Hospital and the Hospital of the Rockefeller Institute New York. He was associated with the Mayo Clinic from 1920 to 1922, and then went to Harvard as associate professor of medicine. He was a member of the House of Delegates of the American Medical Association in 1935 and since 1928 has been a member of the Council on Medical Education and Hospitals. He also served as secretary of the Section on Practice of Medicine from 1929 to 1932, when he was elected chairman. At present he is a member of the editorial board of the *Archives of Internal Medicine*.

**Medical History Reviewed**—The Springfield Medical Association has been devoting recent meetings to a review of the city's medical history, in connection with the celebration of the three hundredth anniversary of the founding of Springfield planned for May 1936. Dr George L. Schadt opened this series September 30 with a paper on 'Medical Societies In and About Springfield, 1636-1936'. At the October 28 meeting Drs Robert A Kilduffe, Atlantic City, N J, and Edmund Eugene W Walker presented papers on 'High Lights in the History of Hospitals' and 'A Brief History of Springfield's Hospitals' respectively. At the November 25 and December 16 sessions Drs Garry de N Hough Jr and Frederick S Hopkins spoke, respectively on 'Medicine in Springfield 1636-1850, and 'Medicine in Springfield, 1850-1900'. Remaining lectures in the series will be given by

- Dr Laurence D Chapin January 27, Medicine in Springfield 1900-1936
- Dr Reginald Fitz Boston February 24, Medicine in Massachusetts and New England from Cow Path to State Road
- Dr John M Burnie, March 30, Development of Surgical Practice in Springfield
- Dr Allen S Johnson April 27, Development of Nonsurgical Specialties
- Dr Eugene W Beauchamp Development of Surgical Specialties
- Dr Henry E Sigerist Baltimore May 18, The Development of Medicine in the United States 1636-1936

## MINNESOTA

**Annual Registration Due During January**—Every practitioner of medicine and surgery holding a license to practice in Minnesota is required by law to register annually during January with the secretary of the board of medical examiners and at that time to pay a fee of \$2. A licentiate who practices without renewing his license is guilty of a misdemeanor and is liable to prosecution.

**Society News**—At the semiannual meeting of the Minnesota Society of Internal Medicine in St Paul in November, Dr Frank J Hirschboeck Duluth was chosen president, Dr George B Eusterman Rochester vice president, and Dr Max H Hoffman, St Paul, secretary. The spring meeting will be held in Duluth—A recent meeting of the Red River Valley Medical Society was addressed in Warren by Drs Charles W Burns, Winnipeg Manit on 'Rupture of

the Spleen" Andrew P MacKinnon, Winnipeg, "Fracture of the Shaft of the Humerus," and Lucian G Culver and Royal V Sherman, Thief River Falls, presented a case report of lateral sinus thrombosis—Dr Albert J Chesley, St Paul, discussed public health problems at the annual meeting of the Renville County Medical Society in Fairfax, November 19.

## NEW JERSEY

**Sanatorium Building Burns**—A building of the Christian Sanatorium, Midland Park, was destroyed by fire, November 24. Thirty-six women patients were rescued by nurses and two were suffocated before they could be removed. The institution is for the care of patients with nervous and mental disease.

**Drive Against Polluted Clams**—The state department of shell fisheries and the state department of health in cooperation with the civic and health officials of Atlantic City have planned a WPA project to remove clams from the polluted waters about Atlantic City and replant them in clean waters. The city has been engaged in a drive to stamp out traffic in polluted clams. Seven persons have been arrested for selling clams dug in forbidden areas, and police have closed roadside stands on the boulevards.

**Personal**—Henry E Starr, Ph D, head of the department of psychology and director of the psychologic and mental hygiene clinic at Rutgers University New Brunswick, died November 2 aged 42. Dr Starr received his doctor's degree from the University of Pennsylvania, where he taught physiologic chemistry, toxicology and psychology from 1917 to 1928, when he went to Rutgers—Dr Hyman I Goldstein Camden, recently returned from Europe, where he delivered addresses at the International Congress of Dermatology and Syphilis at Budapest the Congress on Gout and Uric Acid at Vittel France and the International Congress of the History of Medicine in Madrid.

## NEW YORK

**Society News**—William F Martin, New York assistant counsel to the Medical Society of the State of New York addressed a joint meeting of the Chemung County Medical Society, the Chemung County Bar Association and the Elmira Dental Society, December 11, in Elmira, on "The Legal Liability of Practitioners."

### New York City

**Building for Federation for the Blind**—President Roosevelt participated by long distance telephone in opening ceremonies for a new building for the American Federation for the Blind, 15 West Sixteenth Street, December 5. The new building is three stories high in Georgian style. On the first floor are the braille printing department and the research bureau, on the second the Helen Keller Memorial Room the library and executive offices, on the third the talking book department. Mr M C Migel president of the federation, is the donor of the building and G A Pfeiffer, a trustee, of the furnishings. Helen Keller was among those on the dedication program.

**Personal**—Frank Kiernan, former executive secretary of the Massachusetts Tuberculosis League, has been named director of the New York Tuberculosis and Health Association. He fills the position left vacant by the resignation of Harry Hopkins two years ago to become Federal Emergency Relief Administrator—Dr Armitage Whitman has been appointed associate clinical professor of surgery at New York Post-Graduate Medical School—Dr Frederick T Van Beuren Jr has been made associate dean of Columbia University College of Physicians and Surgeons, succeeding Dr Edward Cathcart—Dr Isidore H Goldberger was elected president of the Bronx County Medical Society at the annual meeting, December 6.

**Society News**—Alexander O Gettler, Ph D, city toxicologist addressed the Bronx Pathological Society, December 16, on 'The Role of Toxicology in the Medicolegal Autopsy'. Drs Max Ritvo Boston, and Frank L Adair addressed the New York Roentgen Society December 16 on 'Roentgen Diagnosis of Lesions of the Breast' and 'Treatment of Carcinoma of the Breast' respectively—Dr Ralph Pemberton, Philadelphia gave the sixth afternoon lecture of the New York Academy of Medicine, December 20 on 'The Present Status of Arthritis and the Treatment of It'. At a meeting of the board of managers of the Society for Prevention of Asphyxial Death November 19 Dr Robert A Wilson presented a report on recent work on 'Intravenous Therapy for Resuscitation'. Dr George F Chandler Kingston N Y was elected to the board to succeed the late Dr Charles Norris.

## NORTH DAKOTA

**Health Officer Appointed**—Dr Harvey J Skarshaug, Guthrie Center, Iowa, has been appointed health officer of Fargo to succeed Dr Burton K. Kilbourne, who resigned to become state epidemiologist of Montana. Dr Skarshaug is a graduate of the State University of Iowa College of Medicine, class of 1926. For a time he served as health officer of La Salle Parish, Louisiana, and has studied at the Johns Hopkins University School of Hygiene and Public Health.

## OHIO

**Personal**—Dr Vermont D Kerns, Duncan Falls, has been appointed health officer of Pickaway County, succeeding Dr Charles C. Beale, Circleville, resigned.

**Hospital News**—The Jewish Hospital of Cincinnati announced the opening of an Institute for Medical Research, November 14. Dr I. Arthur Mirsky has been appointed director of the department of metabolism and endocrinology.

**Lectures by Dr Fairley**—Dr N. Hamilton Fairley, director of the London School of Tropical Medicine, London, England, gave a Frank E. Bunts Lecture at the Cleveland Clinic, December 3, on "Tropical Diseases as They Affect the Practice of Medicine in the Temperate Zone." He gave the first Roger S. Morris Lecture at the University of Cincinnati College of Medicine, December 2, on the same subject.

**Society News**—Dr Jesse G. M. Bullowa, New York, addressed the Academy of Medicine of Cincinnati, December 10, on "Management of the Pneumococcus Pneumonias with Specific Serums."—Dr Francis Carter Wood, New York, addressed the Cleveland Academy of Medicine, December 20, on "Radiation Therapy of Malignancy."—Among others, Dr Reuben Robert Gould addressed the Cleveland Neurological Society, December 18, on "Neurologic Effects of Avitaminosis."—Dr Abram L. Van Horn, Columbus, of the state department of health addressed the Toledo Academy of Medicine, December 6, on "The Health Program Under the Social Security Act." The academy held a hobby exhibit during the week December 13-20.—Dr Ralph W. Good, Cincinnati, addressed the Montgomery County Medical Society, Dayton, December 6, on "Indications for Splenectomy."

## OKLAHOMA

**Personal**—Dr Lewis J. Moorman, former dean of the University of Oklahoma School of Medicine, Oklahoma City, was recently named to Oklahoma's hall of fame by the Oklahoma Memorial Association in recognition of his achievements in medicine. Dr Moorman has been president of the Oklahoma State Medical Association and of the Southern Medical Association.

## PENNSYLVANIA

**Society News**—Dr Martin S. Kleckner, Allentown, addressed the Northampton County Medical Society, Bethlehem, December 20, on "The Relationship of the General Practitioner and the Proctologist in Anorectal Disease."

## Philadelphia

**Personal**—Dr Lawrence F. Flick, president of the board of directors of the Free Hospital for Consumptives and White Haven Sanatorium Association, White Haven, has resigned. Dr Flick founded the hospital in 1895.—Daniel D. Test, who was superintendent of the Pennsylvania Hospital for forty years before his retirement in 1931, died December 1.

**Two Millions to University of Pennsylvania**—The Orphans' Court has recently handed down a ruling giving to the University of Pennsylvania immediate control of a bequest amounting to about \$2,000,000 from the estate of the late George Leib Harrison, retired chemical manufacturer, who died in March 1935. The money will be used to endow the "George L. and Emily McMichael Harrison Memorial Fund for General Surgical Research." The bequest is subject to four annuities.

## SOUTH CAROLINA

**Memorial Resolution**—The American Women's Hospitals committee of the Medical Women's National Association adopted a resolution expressing sorrow at the death of Dr L. Rosa H. Gantt, Spartanburg, and Tryon, N. C. Dr Gantt was at the head of the work of the committee in North Carolina for several years.

**Society News**—Drs Hal M. Davison and Thomas C. Davison, Atlanta, were guest speakers at a meeting of the Greenville County Medical Society, Greenville, recently speak-

ing on "Treatment of Toxic Thyroid Conditions" and "Allergy from the Standpoint of Medicine," respectively. The meeting followed the opening of a new \$110,000 addition to St. Francis Hospital, in which the society took part.—Dr Charles C. Higgins, Cleveland, addressed the Columbia Medical Society in November on "Experimental Production and Solution of Urinary Calculi."

## SOUTH DAKOTA

**Indian Sanatorium at Rapid City**—The Secretary of the Interior has approved the creation of a hundred bed sanatorium for the Sioux Indians at Rapid City. An appropriation of \$375,000 has been made available and the site was chosen by a board of commissioned officers of the U. S. Public Health Service.

## TEXAS

**Society News**—Drs Harry B. Burr, Houston, and John T. Sanders, New Orleans, addressed the Harris County Medical Society, Houston, recently, on "Surgical Treatment of Common Proctologic Conditions" and "Effective Office Management of Commonly Neglected Gynecologic Conditions," respectively.—Drs Jesse Bedford Schlimmire and James H. Black, Dallas, addressed the Smith County Medical Society, Tyler, recently, on "Urticaria" and "Diagnosis and Prognosis of Asthma and Hay Fever," respectively, and Dr John J. Faust, Tyler, on "The General Practitioner and X-Ray Therapy."—Drs Roy L. Grogan and Jerrell Bennett, Fort Worth, presented papers before the Tarrant County Medical Society, Fort Worth, recently, on "Prolapse of the Cord" and "Bleeding During Delivery," respectively.—Drs John H. Burleson, San Antonio, and Holman Taylor, Fort Worth, president and secretary, respectively, of the Texas State Medical Association, addressed a meeting of the fourteenth district at Greenville, recently, on medical economics.

## GENERAL

**Fraudulent Salesman**—A physician of Yonkers, N. Y., reports the activities of a salesman who gave the name D. A. Thomas and identified himself as a representative of a division of the Lee Tire and Rubber Company. When an order placed with Thomas was not received, the physician wrote to the Lee Tire and Rubber Company, who said that the firm had no such representative as D. A. Thomas.

**Grants by National Research Council**—At a special meeting in November the National Research Council made the following grants in the field of the medical sciences:

Dr Alan L. Barach, Columbia University College of Physicians and Surgeons, New York, therapeutic use of helium.

Edmund V. Condry, Ph.D., Washington University School of Medicine, St. Louis, effect of treatment with activated ergosterol on the kidneys, parathyroids and other tissues.

Magnus J. Gregersen, Ph.D., University of Maryland School of Medicine, Baltimore, plasma volume changes.

Dr Orbellio R. Langworthy, Johns Hopkins University School of Medicine, studies of the urinary bladder.

**Society News**—The Catholic Hospital Association of the United States and Canada will hold its twenty-first annual convention in Baltimore, June 15-19.—Dr William B. Carrell, Dallas, Texas, was elected president of the Clinical Orthopedic Society at the annual meeting in Louisville and Indianapolis, November 15-16. Dr Guy A. Caldwell, Shreveport, La., was named vice president, and Dr James E. M. Thomson, Lincoln, Neb., secretary.—The twentieth annual session of the American College of Physicians will be held in Detroit, March 2-6. Dr Walter B. Cannon, George Higginson professor of physiology, Harvard University Medical School, Boston, will deliver the annual convocation oration on "The Role of Emotion in Disease."—At the annual meeting of the Radiological Society of North America in Detroit, December 6, the following officers were elected: Drs John D. Camp, Rochester, Minn., president; Raymond G. Taylor, Los Angeles, William J. Corcoran, Scranton, Pa., and Rabun T. Wilson, Temple, Texas, vice presidents; and Donald S. Childs, Syracuse, N. Y., secretary. Dr Thomas A. Burcham, Des Moines, Iowa, became president.—The seventh annual assembly of the Southeastern Surgical Congress will be held at New Orleans, March 9-11, with headquarters at the Roosevelt Hotel.—Officers elected at the annual session of the Seaboard Medical Association in Newport, Va., December 3-5, were Drs Spencer P. Bass, Tarboro, N. C., president; Frank H. Redwood, Norfolk, Va., Floyd P. Wooten, Kingston, N. C., Robert H. Wright Jr., Phoebus, Va., and Edward Marvin Mann, Moyock, N. C., vice presidents, and Clarence Porter Jones, Newport News, secretary, reelected. Next year the society will meet in Tarboro.



## Government Services

### MEETING OF ADVISORY COMMITTEES ON MATERNAL AND CHILD WELFARE SERVICES UNDER THE SOCIAL SECURITY ACT

Dec. 16 and 17, 1935, there were called together at the Children's Bureau in Washington the General Advisory Committee on Maternal and Child Welfare Services and the special committees on Maternal and Child Health, Crippled Children and Child Welfare Services that had been appointed by the Secretary of Labor to assist the Children's Bureau in its work. The special committees met on December 16 to discuss matters pertaining to the special fields covered by parts 1 to 3 of title V of the Social Security Act. The General Advisory Committee met on the following day, first in general session with all members of the special committees, and later in business session to receive reports of the special committees. The following members of these committees were present:

#### GENERAL ADVISORY COMMITTEE ON MATERNAL AND CHILD WELFARE SERVICES

|   |   |
|---|---|
| Kenneth D Blackfan MD chair<br>man Boston | Mary E Murphy Chicago<br>Robert B Osgood MD Boston,<br>Thomas Parran Jr MD Albany,<br>N Y |
| Fred L Adair MD Chicago                   | Mrs. Abbie C Sargent, Bedford<br>N H  |
| W W Bauer MD Chicago                      | Mrs Dora H Stockman East<br>Lansing, Mich   |
| M O Bousfield MD Chicago                  | Mrs Nathan Strans New York  |
| C C Carstens New York                     | Linton B Swift New York   |
| F H Fljoxdal Detroit                      | Douglas A Thom MD Boston  |
| Paul H King Detroit                       |   |
| Mrs. Blanche L La Du St Paul              |   |
| Mrs. S Blair Luckie Chester Pa            |   |
| Rev Bryan J McEntegart New<br>York        |   |

|  |                                      |
|--|--------------------------------------|
| ADVISORY COMMITTEE ON MATERNAL AND CHILD HEALTH  |                                      |
| Henry F Helmholtz MD chair<br>man Rochester Minn | George W Kosmak MD New<br>York       |
| Thomas F Abercrombie MD<br>Atlanta Ga            | Grover F Powers MD New<br>Haven Conn |
| Ernest A Branch DDS Raleigh<br>N C               | Oscar Reiss MD Los Angeles           |
| Hazel Corbin RN New York                         | Lillian R Smith MD Lansing<br>Mich   |
| Robert L DeNormandie MD,<br>Boston               |                                      |

In addition, the following members of the General Advisory Committee sat with the special committee: Drs F L Adair, W W Bauer, K D Blackfan, Thomas Parran and D A Thom.

|  |  |
|--|--|
| ADVISORY COMMITTEE ON SERVICES FOR CRIPPLED CHILDREN |  |
| Albert H Freiberg MD chair<br>man Cincinnati         | Harry H Howett Lansing Mich            |
| Edith Baker St Louis                                 | Oscar Lee Miller, MD Charlotte<br>N C  |
| George E Bennett MD Balti<br>more                    | Marion Williamson RN Louis<br>ville Ky |

In addition the following members of the General Advisory Committee sat with the special committee: Drs K D Blackfan, R B Osgood and Thomas Parran.

#### ADVISORY COMMITTEE ON COMMUNITY CHILD WELFARE SERVICES

|   |                                      |
|---|--------------------------------------|
| H Ida Curry chairman New<br>York        | Rose J McHugh Albany N Y             |
| C W Areson New York                     | J Prentice Murphy Philadelphia       |
| Mrs Violet S Greenhill Austin,<br>Texas | Emma C Puschner Indianapolis         |
| Cheney Jones Boston                     | Gay B Shepperson Atlanta Ga          |
| Mary S Labaree Harrisburg Pa            | Ruth Taylor White Plains N Y         |
|   | C V Williams Chicago                 |
|   | Miss Alice M Leaby Washington<br>D C |

In addition the following members of the General Advisory Committee sat with the special committee: C C Carstens, Mrs Blanche L La Du and Rev Bryan J McEntegart.

#### PROVISIONS OF SOCIAL SECURITY ACT

As the first order of business the provisions of the Social Security Act for Maternal and Child Welfare Services were reviewed by the special committees. In brief, they are as follows:

The Social Security Act, in title V, parts 1, 2 and 3, authorizes federal grants to the states (including Alaska, Hawaii and the District of Columbia) for maternal and child health services, services for crippled children and child welfare services. Federal administration of these provisions is placed by the act in the Children's Bureau of the United States Department of Labor. State administration of the maternal and child health provisions is placed under the state health agency, that for services for crippled children under whatever state agency is designated for that purpose by the state itself and that for child welfare services under the state public welfare agency.

The Children's Bureau has organized three divisions to direct the federal part of the program for these three types of services: a maternal and child health division and a crippled children's division, each headed by a physician and functioning under the general supervision of the assistant chief of the bureau, who is also a physician, and a child welfare division, headed by a social worker, and functioning under the general supervision of the chief of the bureau.

The purpose of the maternal and child health services, as stated by the act is to enable each state "to extend and improve, as far as practicable under the conditions in such state, services for promoting the health of mothers and children, especially in rural areas and in areas suffering from severe economic distress." A total annual federal appropriation of \$3,800,000 is authorized by the act for this purpose. Allotments to the states from this appropriation are to be made as follows:

(1) to each state a uniform grant of \$20,000 to be matched by the state; (2) to each state such part of \$1,800,000 as the number of live births in such state bears to the total number of live births in the United States; such grant also to be matched 50-50 by the state; (3) from the balance of \$980,000, funds may be allotted on the basis of the financial need of each state for assistance in carrying out its state plan, taking into consideration also the number of live births, grants allotted from this third fund do not have to be matched by the state.

The services for crippled children are "for the purpose of enabling each state to extend and improve (especially in rural areas and areas suffering from severe economic distress), as far as practicable under the conditions of such state, services for locating crippled children and for providing medical, surgical, corrective and other services and care, and facilities for diagnosis, hospitalization and after-care for children who are crippled or who are suffering from conditions which lead to crippling." A total annual federal appropriation of \$2,850,000 is authorized for this purpose, to be allotted to the states as follows: "\$20,000 in the form of a uniform grant to each state, and the balance to be divided among the states according to the need of each state, taking into consideration the number of crippled children in such state in need of the services referred to and the cost of furnishing such services to them."

The child welfare services are established by the act "for the purpose of enabling the United States, through the Children's Bureau to cooperate with state public welfare agencies in establishing, extending and strengthening especially in predominantly rural areas, public welfare services for the protection and care of homeless dependent and neglected children, and children in danger of becoming delinquent." The total annual federal appropriation authorized for this purpose is \$1,500,000, to be allotted \$10,000 to each state and the remainder on the basis of the ratio of the rural population of the state to the total rural population of the United States. The act does not require that these grants be matched by the state in any specified ratio. The funds are available for assistance to state agencies and for payment of part of the cost of local service.

In order to receive these funds, a state must submit to the Children's Bureau for approval a state plan for maternal and child health services and a state plan for crippled children's services. In the case of the child welfare services the act states that the plans are to be "developed jointly by the state agency and the Children's Bureau" and that the funds "shall be expended for payment of part of the cost of district county or other local child welfare services in areas predominantly rural, and for developing state services for the encouragement and assistance of adequate methods of community child welfare organization in areas predominantly rural and other areas of special need."

Conditions to be met by state plans for maternal and child health services and services for crippled children are as follows:

- 1 Financial participation by the state
- 2 Administration or supervision of administration by the designated state agency
- 3 Such methods of administration (other than those relating to selection, tenure of office and compensation of personnel) as are necessary for efficient operation of plan
- 4 Provision for such reports by the state agency as the Secretary of Labor may require.
- 5 For maternal and child health services extension and improvement of local maternal and child health services administered by local child health units. For crippled children's services provision for carrying out the purposes specified in the act.
- 6 Cooperation with medical, health, nursing and welfare groups and organizations and, in the case of the crippled chil-



dren's services, "with any agency in such state charged with administering state laws providing for vocational rehabilitation of physically handicapped children"

7 And in addition, for maternal and child health services provision for development of demonstration services in needy areas and among groups in special need

The reports of the three special committees were accepted and endorsed by the General Advisory Committee. They are as follows

#### REPORT OF ADVISORY COMMITTEE ON MATERNAL AND CHILD HEALTH

Dr. Albert McCown, director of the Division of Maternal and Child Health of the Children's Bureau, first outlined for the committee the proposed plan of organization and its relationship to the states in the development of plans for maternal and child health services. It was evident that there would be wide variation in the plans submitted by the different states and the committee felt that there must be a great deal of leeway allowed in the development of these plans but that certain features with regard to organization and personnel are essential in any plan. The committee was greatly helped in its work by the excellent suggestions embodied in a report<sup>1</sup> made by a committee of the State and Territorial Health Officers appointed to consider standards for state divisions of maternal and child health, personnel and programs, and adopted by them in conference in Washington, June 19, 1935. After considering this program under the seven requirements in the act which must be fulfilled by each state plan presented to the Children's Bureau for approval, the following suggestions were made:

It was the consensus that there should be in the state department of health a division of maternal and child health or a comparable administrative unit, coordinate with all other major administrative divisions, with a director responsible to the health officer. It was further suggested that the director should be a physician and that additional medical staff for consultation and advisory service should consist of full-time or part-time physicians with training and experience in either maternal or child health work, preferably both. It was suggested that a full-time dentist be added to the medical staff and, furthermore, that there might be regional advisers to professional groups in the fields of pediatrics, obstetrics and dentistry. The committee further suggested for consideration by the state agencies that the qualifications for the director of the division of maternal and child health be as follows: (1) graduation from a recognized school of medicine, (2) thorough training in pediatrics or obstetrics or both, and not less than one year's administrative experience in the field of maternal and child health, (3) eligibility for examination for medical licensure in the state where service is to be rendered, (4) preferably, training in the fundamentals of public health, (5) preferably, at least one year in the private practice of medicine.

In view of the fact that the number of qualified persons available for positions of this kind is probably not large enough to meet the need, the committee approved the use of funds for the training of personnel.

As regards participation in a maternal and child health program by local or other qualified physicians, the committee was of the opinion that such services should be arranged for jointly by the local health department and the local medical association, with the advice of the director of the state division of maternal and child health.

It was the opinion of the committee that as far as possible the maternal and child health work in any given area should be carried on by local qualified physicians and, where such are not available, that other arrangements be made in local maternal and child health centers.

The committee also agreed that the medical men taking part in this program should be paid for their services.

The development of advisory committees for the purpose of facilitating cooperation of the state health department with medical, nursing and welfare groups and organizations was discussed. It was the sense of the committee that the purpose of this provision of the act could best be met by the formation of one or more advisory committees on which there are representatives of medical, nursing, welfare and other interests concerned.

In outlining the scope of the local program the question of supervision of maternal and child health services was discussed as well as the state and local educational program to be carried out for professional and lay groups with the assistance of state and county medical organizations. The cooperation of local medical, dental and nursing organizations and of all public health and welfare agencies in the local area was strongly advised. As required by the act it was pointed out that pro-

vision must be made for extension and improvement of local maternal and child health services.

The advisory committee agreed that with these interpretative additions the report of the State and Territorial Health Officers<sup>1</sup> represents an admirable statement of the essential features of a state program and recommends that they be given very careful consideration by all state agencies in the development of their plans.

The committee emphasized strongly the importance of the educational features of the program and suggested that the divisions of maternal and child health services in the several states might well be coordinating agencies for all health education concerning mother and child.

The committee heartily endorsed the publication of a brochure that is in process of preparation by the Children's Bureau relative to its organization, general functions and aims, with special emphasis on the supervision of its medical activities by physicians, and it further recommended that the medical profession be kept constantly advised of the progress and development of these activities through the medical press.

The submission of reports by states, both those that have to do with financial matters and also with activities concerning maternal and child health programs, was discussed. Reference was made to the work of a committee of the United States Public Health Service and the Children's Bureau which is now preparing a joint report form, and the committee suggested that cooperative research projects could be well handled in this way.

Throughout the meeting of the committee, emphasis was placed repeatedly on the advantages to be gained from cooperation with medical, nursing and welfare groups and organizations. A number of helpful and interesting suggestions were made with respect to the development of demonstration services in needy areas and among groups in special need. The hope was expressed that the committee would seriously consider at a later time offering suggestions for investigations to be undertaken by the Children's Bureau in order to promote the efficient administration of title V.

#### REPORT OF ADVISORY COMMITTEE ON SERVICES TO CRIPPLED CHILDREN

After a preliminary statement of the other provisions of the Social Security Act relating to maternal and child health and child welfare services, the provisions for crippled children were discussed. It was reported that the administration of this part of the act would be under the immediate direction of a Crippled Children's Division of the Children's Bureau, headed by a physician and receiving general supervision from the assistant chief of the Children's Bureau, who is also a physician. The work of this division will be developed in close cooperation with the Maternal and Child Health Division and the Child Welfare Division.

The division of the United States into from five to seven regions, each with regional representatives headed by physicians will provide consultative field services to the states in problems of maternal and child health and crippled children. Each regional office will also have the services of public health nurses and social service consultants for education and consultative work in connection with child health and child welfare. Other state and regional consultants, such as trained orthopedic surgeons or technical advisers, will be used as required. The need for training facilities for nurses, physical therapists and social workers in the problems of crippled children was considered.

The committee discussed participation of the states under the requirements for the approval of state plans, as follows:

1 Financial participation by the states. The extent of financial participation by the state, as distinguished from the political subdivisions, was discussed and legal rulings sought which would determine the extent of participation required of the state under the act. The question of revolving funds was discussed and whether revolving funds that were not renewed by the state could be used for matching purposes, as constituting state financial participation. The question of whether administrative costs alone could be considered adequate participation within the intent of the act was also discussed. All these questions were referred to the Children's Bureau for legal interpretation without recommendation.

2 Administration of the plan or supervision of administration of the plan by the state agency. The committee discussed the need for state leadership in carrying out the requirements of the act and the necessity for adequate supervision by the official agency when administration is in the hands of local political subdivisions. It was felt that if present administration of a program by a state agency was satisfactory, every effort should be made to preserve or maintain this. The function of the bureau's field staff in aiding states in setting up a program

<sup>1</sup> Copies of this report may be had on request from the Bureau of Health and Public Instruction, American Medical Association.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Nov 30, 1935

#### The History of Medical Education in the United Kingdom

In his opening address to the 142d session of the General Council for Medical Education and Registration, the president, Sir Norman Walker, surveyed the history of medical education and legislation in the United Kingdom. During the early years of the nineteenth century many efforts were made to secure better regulation of the practice of medicine, for it had become evident that something different from the limited rights conferred on universities and medical corporations was required. The medical act of 1858 resulted in the establishment of a council with rather vague and undefined powers. The council first settled who was to come on the register by virtue of his existing qualifications or appointments. It next made arrangements for the production of the British Pharmacopoeia, asked all teaching bodies for a statement of their requirements from candidates for qualification, and erected a committee on education. It laid down that four years must be spent in professional studies, that the licensing bodies would do well to encourage students to study natural science before their strictly medical course, and that both the first and the final examination should be partly written and partly oral, and, so far as practical, clinical. The act of 1886 established several new principles. No one could today be registered who had not passed a qualifying examination in medicine, surgery and midwifery, and the system of approximately decennial inspection of examinations, which it introduced, had been of equal value to the council and to the public. In the General Medical Council every licensing body had a representative to contribute his share to every change in medical education. The council's duty was to ensure "that the standard required from candidates at the qualifying examinations shall be such as sufficiently to guarantee the possession of the knowledge and skill requisite for the efficient practice of medicine, surgery and midwifery." The elasticity of the system was one of its strongest characteristics. The council placed efficiency before uniformity.

#### Aids to Hearing

The medical profession is only beginning to give attention to the numerous electrical aids to hearing now on the market. These are extensively advertised by commercial firms who exploit the public by means of extravagant claims. Perfect hearing is promised, irrespective of the causation and degree of deafness or the age of the sufferer. The National Institute for the Deaf is doing valuable work in protecting the public against fraud. It has issued for the information of the deaf a booklet entitled "The Choice of Hearing Aids." The deaf are advised in the first instance to take medical advice as to whether an aid is likely to be beneficial. They are warned of the dangers of exploitation and advised not to sign any contract with a hearing aid purveyor without reading it carefully. The institute maintains a list of firms on which the deaf can rely for guidance and fair dealing. These firms have agreed to allow an extended trial at home of any instrument subject to payment of 5 per cent of its value. Thus the deaf can avoid being gulled by misleading advertisements and circulars of firms who refuse this home trial and who decline to make any financial adjustment if the aid sold proves unsatisfactory. The purchaser of an aid to hearing is advised to choose a firm whose advertised claims are set forth in moderate terms to take with him a friend whose voice he knows and who knows his degree of deafness, so that he can make comparison with the vender's voice, and to insist on a trial of

the apparatus at home for a sufficient period, say from two to four weeks. If the instrument does not give satisfaction during this period, it is never likely to do so. It is pointed out that a carbon microphone can be made more than usually sensitive for a short time by shaking up the granules and adjusting the diaphragm. The granules should therefore be allowed to settle down again before the normal performance of the hearing aid can be assessed. The expense of maintenance, it is pointed out, is greatest for the valve amplifying type, next for the bone conduction type, with its relatively high current consumption, and lowest for the simple telephone type.

#### The War Pensioners

The ministry of pensions, which was established in 1917, furnishes a grim record of the legacy of the war. Its expenditure at the end of the present financial year will reach \$6,000,000,000, nearly twice the national debt before that great catastrophe. In 1920-1921, the peak year, the pensioners—men, women and children—numbered 3,500,000 and the annual expenditure was \$530,000,000. Now the pensioners number just over 1,000,000. Two out of every five men who served in the war have received pensions. Among the recipients are 400,000 who suffered disabilities and whose average age is now 41. Other pensioners are widows numbering 120,000, 240,000 parents of men killed, whose average age is now 70. The ministry has been the guardian of 1,750,000 children of ex-service men, caring for their maintenance and education, but now only 26,000 remain and in three years this trusteeship may be at an end. In the peak year as many as 1,200,000 children were in receipt of pensions or allowances. It was determined that, as far as possible, no injury should be done by the war to the prospects of the younger generation and special provision was made for their education by grants and in other ways.

#### PROVISION FOR THE WOUNDED

Ten hospitals are still maintained by the ministry of pensions in various parts of the country. Although seventeen years has passed since the guns became silent, men are still being treated for gunshot wounds. Old wounds that seemed to have healed have flared up. Even now about 2,000 men are to be found on any given day in the war hospitals and 140 are admitted weekly. An achievement of the ministry is the provision and fitting of artificial limbs. There are seventeen limb-fitting centers of which the chief is at Roehampton. At this hospital there were from January 1 to October 14 of the present year 1,534 admissions and 1,492 discharges, and 713 operations were performed. Artificial limbs are now supplied to and maintained for 35,000 men.

#### Death Due to Eyebrow Plucking

A prevalent form of female vanity is eyebrow plucking. That it may have a fatal result was shown by an inquest at Birmingham on a girl, aged 18 years. She plucked her eyebrows, and a pimple formed over one eyebrow. She had medical treatment but refused to allow an abscess to be opened. Streptococcal septicemia developed and she died a fortnight after the plucking. At the inquest a physician gave evidence that the infection originated where the hairs had been plucked out. He regarded the practice as dangerous and the case was the second he had had this year, though the other was not fatal. Most hair plucking was done under nonaseptic conditions, without any precautions, but even if the skin and forceps were sterilized it would not be safe. He thought that it was a practice that never would be stopped.

#### Celebration of a Woman's 108th Birthday

Mrs Rachael Macarthur of Trinity Road, Edinburgh, has celebrated her 108th birthday. One of the guests was a surgeon who operated on her for appendicitis at the age of 93. She is the widow of a physician and rises early every day and dresses herself.

## PARIS

(From Our Regular Correspondent)

Nov 22, 1935

## Effect on Bones of a Restricted Diet

At the July 12 meeting of the Société médicale des hôpitaux, two cases were reported by Weissenbach and Lièvre which illustrate the serious remote effects that may follow a too vigorous diet and free purgation in cases of hypertension. A woman, aged 54 had suffered from severe headaches and epistaxis during 1929-1930. The blood pressure was 260. A treatment comprising marked restriction of diet and free saline purgation was prescribed. All meat, fish, eggs, bread and other starchy foods were to be avoided. Only a small amount of animal fats, fruits, vegetables and cheese were allowed. This diet was faithfully carried out for a year. Its first ill effect was a diarrhea accompanied by colics, which could not be relieved by medication. In August 1931 a generalized edema was observed. The diet was made a little more liberal, but all salt was interdicted. From August 1932 to August 1934 all milk and fats were forbidden but the previous diet was to be followed during five days of every month. In August 1932, following pain over the spine (cervical and lumbar regions) and long bones, a roentgenographic examination revealed a diffuse osteoporosis. The patient was seen by Weissenbach and Lièvre for the first time in April 1935. They found a slight dorsal kyphosis and marked tenderness on pressure over the spine and long bones. The blood urea was normal but there was a slight diminution of the calcium content of the blood. A mixed ample diet, rich in fats and vitamins, as well as calcium chloride, phosphates and chlorophyll, was given. This was followed by marked improvement of the general condition and disappearance of the spontaneous pain over the spine and long bones. Lièvre in his book (Masson & Cie, 1932) has placed such bone changes in the group of "starvation bone diseases," often seen in China, India, in central Europe and Russia during the World War. The osteoporosis in this case was accompanied by a marked decrease in the blood pressure.

The second patient, a woman, aged 68, consulted the authors in November 1934 on account of pain in the spine and a dorsal kyphosis. A diagnosis of hypertension had been made eight years before. During the period from 1930 to 1934, the systolic blood pressure being 250, strict diet was prescribed. All meat, eggs, fish, cheese and sweets were forbidden. Only fats, vegetables, milk and fruits were allowed. A year later (1931) milk was discontinued and only during the year preceding her examination by Weissenbach and Lièvre was meat allowed twice a week. Saline purgation was carried out once a week. About a year after beginning this strict diet the patient complained of pain in the pelvic girdle and inability to walk. During the six months prior to being seen by the authors, the patient found the pain in the spine almost intolerable, she observed a spinal deformity and also transitory edema of both lower extremities. Examination in November 1934 revealed a marked dorsal kyphosis and marked sensitiveness to pressure over all the long bones. The patient walked with great difficulty. The blood pressure was 180 systolic and 120 diastolic. The blood examination revealed a decreased calcium and an increased phosphorus content. On roentgenographic study of the spine and long bones a marked decalcification was noted. Following a diet rich in fats and vitamins, especially vitamin D, aided by calcium salts the bone pains disappeared completely and soon the patient was able to walk. The last blood pressure readings were 190 systolic, 90 diastolic.

The most typical symptoms of bone changes due to an imperfectly balanced diet are pain especially over the spine, thorax and pelvis, accompanying an inability to walk without demonstrable nerve or joint lesions. The authors of this

paper prefer to employ the term "deficiency bone disease" rather than osteomalacia for such cases. The chief etiologic factor in these two cases, especially the second, was the protein deficiency, although there was an abundance of vitamin C (fresh fruits) and of vitamin B (green vegetables). The diet given in these cases was especially marked by the lack of vitamins A and D.

## Acidosis Coma Following Large Doses of Salicylates

The occurrence of acidosis coma as a complication of the use of salicylates in the treatment of rheumatism is well known. At the July 12 meeting of the Société médicale des hôpitaux a case was communicated by Labbe and his associates. A woman, aged 25, was admitted May 15 with a history of an acute articular rheumatism of two weeks' duration. Daily doses of 12 Gm of sodium salicylate without sodium bicarbonate had been given. The evening before admission, following a brief period of delirium and restlessness, she became comatose. Examination on admission failed to reveal any localizing symptoms, but the deep, noisy and rapid respiration appeared typical of an acidosis. There was an absence of glycosuria and the blood sugar was 1.67 Gm. The alkali reserve was markedly decreased, 18 volumes per cent of carbon dioxide, and the  $pH$  of the urine was 7.2. Sodium bicarbonate 50 Gm was immediately given hypodermically and by rectum. The following day the coma persisted but the respiration was of the Kussmaul (air hunger) type. The alkali reserve had risen to 42.9 volumes per cent, the blood urea was 125 and the  $pH$  of the urine was 7.60. The blood sugar had dropped to 1.01. The alkaline treatment was continued and the patient became conscious forty-eight hours after admission to the hospital. Complete recovery from the acidosis ensued. Labbe was of the opinion that in this case there was a pure acidosis, without ketosis. The acetoneuria reported by others was, in his opinion, only an accessory finding. The chief factor in an acidosis following excessive salicylate medication was serious degenerative lesions in the liver.

## Lipase Injections in Hepatic Cirrhosis

As a result of experimental studies, Fiessinger and Gajdos have found that the liver plays an important part in the formation of the lipase found in the blood serum. In cases of hepatic insufficiency there is a marked diminution of the lipase content of the blood serum. In dogs to which liver extract has been given intravenously or intramuscularly there is an increase of lipase in the blood serum. Based on these observations, they began the use of lipase in cases of cirrhosis of the liver with ascites. Their first successful case was reported at the July 12 meeting of the Société médicale des hôpitaux.

A woman, aged 58, had been treated during 1934 for an alcoholic polyneuritis of the lower extremities and an incipient hepatic cirrhosis without ascites. About three months later she again entered the hospital with a well marked ascites and typical venous collateral circulation of the abdominal wall. As she was not benefited by the usual medical treatment during the following three months, a series of lipase injections was begun, 5 cc. of liver lipase of dogs containing 5 units was injected every two days without any decrease in the degree of ascites. About eight weeks later, their method of obtaining lipase from pig's liver having been perfected, 10 cc. was injected daily for five days with an interval of three or four days between series of five doses. A marked increase in the quantity of urine eliminated was first noticed and it was possible to prolong the intervals between relief of the ascites by trocar. As the diuresis increased the ascites became less and finally disappeared completely. They were able to follow this marked improvement by repeated hepatic function tests. They have observed similar good results in six other cases of cirrhosis of the liver with ascites but in four others the method failed to check the disease.

### Gonorrheal Septicemia with Recovery

A case of multiple gonorrheal systemic localization has been reported by Cain and Cattani at the Societe medicale des hopitaux. A woman, aged 38, had been taken ill suddenly March 8 with severe pain in the throat, marked prostration and recurrent chills. The following day a polyarthritis appeared, which became especially marked in the right knee. On admission to the hospital, March 13, the picture was that of an acute sepsis, with high temperature, asthenia, enlarged spleen, a purpuric eruption and greatly swollen right knee. Hemocultures and examination of the knee exudate were negative but a large number of gonococci were found, on staining, in the pus of the cervical canal. The patient became delirious and somnolent. A lumbar puncture revealed a large number of polymorphonuclear leukocytes, lymphocytes and a few gram-negative diplococci (intracellular and extracellular). Antimeningococcus serum was given but without any amelioration of the cerebral condition. The meningitis became more marked March 15 in the form of a positive Kernig sign and rigidity of the neck. The meningeal symptoms gradually lessened in intensity, but two weeks after admission to the hospital a presystolic murmur was heard. A culture made following puncture of the right knee was positive for gonococci. Following arthrotomy, the knee infection subsided and no further complications appeared. Cain and Cattani's patient recovered from the meningitis, but a cardiac lesion has persisted.

### Procaine Infiltration of Lumbar Sympathetic for Phlebitis

Kunlin and Lucinesco, two assistants of Professor Leriche, reported five cases, at the July 10 meeting of the Societe de chirurgie, in which anesthesia of the lumbar sympathetic was employed in the treatment of the postoperative and varicose vein types of phlebitis. In the first case, a phlebitis of the right leg appeared five days after an injury of the face, shoulder and hand. The infiltration of the right lumbar sympathetic with a solution of procaine hydrochloride was done, three days after the onset of the phlebitis. There was a marked relief from pain after this intervention. Two other infiltrations were made, one on the next day and a third six days later. The pain and swelling receded rapidly and the latter had completely disappeared twenty-five days after the onset of the phlebitis.

In a second case, the phlebitis appeared eleven days after a cholecystectomy. There was moderate pain in the left limb and a demonstrable (1 cm.) increase in the circumference. An infiltration of the left lumbar sympathetic at the level of the second lumbar vertebra, with 10 cc. of a 1 per cent solution of procaine, was immediately followed by relief from pain but the swelling became more marked. Following two other infiltrations there was a very slow disappearance of the edema, so that when the patient was reexamined one year later there was no difference in the circumferences of the two limbs. In the third case the signs of a phlebitis appeared eleven days after a subtotal hysterectomy. Three infiltrations were given in this case. The relief of pain and the recession of the edema were also slow, and not until four months later had all of the swelling disappeared. The fourth was also a case of postoperative (appendectomy) phlebitis, which appeared on the tenth day. The pain was relieved within twenty-four hours after the first infiltration with 20 cc. of 1 per cent procaine solution, but in spite of a number of subsequent treatments the edema disappeared very slowly. In the fifth case the phlebitis occurred after saphenectomy for varicose ulcer of the leg. Here again the pain disappeared soon after the first infiltrations.

The theory of Leriche is that, by anesthetizing the lumbar sympathetic of the same side as that on which the phlebitis is located perivenous sympathetic irritation with resultant

vessel spasm can be relieved. The technic is simple. Its object is to block the sympathetic chain by infiltration through a puncture made at the level of the second lumbar spinous process, between the second and third transverse processes. Twenty cubic centimeters of a 1 per cent procaine solution is injected into the cellular (retroperitoneal) tissue round the lumbar sympathetic.

### The Etiology of Mumps

At the Academie de medecine, October 15, Levaditi, Martin, Bonnefoi and Schoen reported observations made with the object of verifying those of Johnson and Goodpasture, reported in 1934, on the existence of a virus capable of producing parotitis by inoculation of the saliva into the parotid gland of monkeys. Levaditi and his associates are of the opinion that the presence of some pathogenic agent in the saliva of individuals suffering from mumps which can cause an interstitial parotitis in certain species of monkeys is an established fact. Such experiments are successful only if the saliva is injected directly into Steno's duct and fails when it is injected into the general circulation into the nasal fossae or by simple contact. The parotitis remains unilateral unless the opposite gland also is inoculated. The organism in general is never infected. Transmission of the disease in series is difficult. Instead of "virus," Levaditi and associates prefer the term "pathogenic element." The pathogenic element traverses porcelain filters poorly, can be preserved to a certain extent in glycerin, is quite thermoresistant does not show any growth on culture mediums and does not present the morphology of any known organism.

Control studies made by Levaditi and his associates led them to believe not only that this aspect of the question was somewhat overlooked by Johnson and Goodpasture but that the virus or 'pathogenic element' is not a specific one. An identical or at least similar element is found in normal saliva, although in very small amounts. On the other hand, certain ultraviruses especially the ultravirus of the Nicolas-Favre disease, when inoculated into the parotid of monkeys are capable of producing an inflammatory reaction which does not differ in any respect from that observed after inoculation with the saliva of individuals suffering from mumps. Finally, analogous histologic changes, although less marked, follow injection through the duct of Steno of inert substances, such as horse serum, white of egg and tapioca. The paper of Levaditi and his associates published in the October 15 issue of the *Bulletin de l'Academie de medecine* is of great interest to bacteriologists and to clinicians.

### Limiting the Use of Waters at Health Resorts

The minister of public health recently asked the Academy of Medicine to investigate as to whether the use of the various springs at health resorts should not be subjected to more rigid control since at present such use is possible without medical surveillance. Cases have been reported of injurious effects due to excessive use of the waters at Vichy, of urinary retention from too free drinking of those of Vittel and Contrexeville, of congestion or pulmonary edema from the use of too many hot baths for patients with cardiac lesions or hypertension. All treatment at resorts should be given after careful medical examination.

The Academy of Medicine approved the following

- 1 That the attention of the public is drawn to the frequent failure if not danger of attempting to take treatment without medical surveillance. The waters contain mineral constituents that may be harmful in certain diseases. In every resort, notices to this effect should be posted.

- 2 The indiscriminate use of the waters of the various springs should be prohibited.



## BERLIN

(From Our Regular Correspondent)

Nov 4, 1935

## Reorganization of the Local Krankenkassen

A recent letter reported that the situation of the local *krankenkassen*, which constitute the larger part of the *krankenkassen*, is unfavorable. In the meantime, new ordinances have been promulgated. Since 1933 attempts have been made to eliminate the many evidences of friction in the realm of health insurance by the acceptance of voluntary agreements, but owing to unfavorable influences the desired goal has not been attained, as is generally admitted. The organization of the *krankenkassen*, and particularly of the local and the guild *krankenkassen*, must, however, be adapted to the requirements of a rational administration and their ability to serve and their performances be thereby increased. It may be stated that the guild *krankenkassen* comprise certain groups of artisans. Although the number of *krankenkassen* has for many years been showing a downward trend, the total number of societies is still fairly large. For the year 1934 the average number of *krankenkassen* organized under federal auspices was 6,144, of which number 1,857 were local, 408 rural, 3,135 industrial plant, 710 guild and 33 miners organizations. The average membership of an *ortskrankenkasse*, or local organization, was 6,530 members, and of a guild *krankenkasse*, 745 members. The new ordinances seek mainly to effect a better organization of the local and the guild *krankenkassen*. The goal set is that for every district of a *versicherungsamt*, or insurance bureau (which generally coincides with a *landkreis* or in large cities with the *stadtkreis*, or ward) there shall be only one general *krankenkasse*. Heretofore there have been several local *krankenkassen* in many of these districts. These can now be united if that would make their administration more economical or if their amalgamation is desirable for other reasons. It is permissible also to take away part of the jurisdiction of a *krankenkasse* and assign it to some other *krankenkasse*. No doubt, therefore, within the next few months, a considerable number of local *krankenkassen* will disappear since in all Germany there are only a thousand *versicherungsämter*, or insurance bureaus and the general plan is to have only one local society in each insurance district. The question of amalgamation to lower the administrative costs is the main angle to be considered because experience has shown that the most efficient *krankenkassen* are those having a membership of from 20,000 to 25,000 members. After completion of the reorganization, only the local *krankenkassen* of the large cities will have a membership in excess of that. Owing to the unrest in some of the sections, it is planned to push the reorganization and to complete it by the end of the year.

## Meeting of Neurologists and Psychiatrists

In the midst of the reorganization that has been taking place, the German psychiatrists and neurologists met this year for the first time in joint session. As Professor Rüdin of Munich the new federal leader of the combined societies pointed out, this amalgamation is designed to oppose the divergent tendencies of overspecialization which is in keeping with the wishes of the federal government. For the same reason the departments of mental hygiene and psychotherapy are to be combined with the new society and their separate sessions are to be restricted. It is interesting that the first day which was devoted to neurology the chairman of the neurologic section Professor Pette of Hamburg saw fit to emphasize that neurology is not to be regarded as a part of psychiatry.

W. Witz of Stuttgart presented a paper on The Problems of Neurologic Hereditary Biology. In the typical hereditary disorders external influences serve, at the most only to accelerate the progress of the disease. Combined and mixed forms

point to a combination of different pathologic genes. A recurrence of nervous diseases through mutation is entirely plausible and can be harmonized with the prevailing views on hereditary biology and, moreover, proved in accordance with the experimental theories of heredity. Thus far only Huntington's chorea has been brought under the sterilization law, but muscular dystrophy should either be included or should be regarded as a severe bodily deformity.

Several papers pointed out that, according to researches on twins (Thums of Munich) hereditary predisposition is not the decisive factor in the origin of multiple sclerosis.

Ostertag of Berlin opposed the belief in the hereditability of syringomyelia and warned against generalizations before a thorough study of a comprehensive material has revealed unequivocal evidence of hereditary influences. Mauz of Marburg dealt with predisposition to convulsive attacks and with the various types of ictaline constitution. According to Mauz there is no doubt of the importance of predisposition for the solution of the epilepsy problem. In an individual case the question is not whether it is inherited or acquired but as to what extent it is inherited and to what extent it is acquired. Conrad of Munich also discussed the importance of hereditary predisposition in epilepsy. According to researches on 258 pairs of twins, not only exogenous but also endogenous factors play a part in jacksonian epilepsy. During the discussion it was brought out that by means of encephalography jacksonian epilepsy can be diagnosed surprisingly often and that on the other hand encephalographic and neurologic observations do not always exclude true epilepsy.

At a joint meeting of the neurologic and the psychiatric sections, late syphilis of the central nervous system was discussed. Jähnel of Munich opposed the false assumption that, by the neglect of early treatment in syphilis, the appearance of late syphilis, and particularly of paralysis, can be avoided. Of interest were his experiments on the dormouse, which had been infected with syphilis. After their winter sleep no more spirochetes were found in the brain, but spirochetes were found in the controls whose winter sleep had been purposely interrupted. Possibly this action can be explained by the lowering of the temperature.

Meggendorf of Erlangen emphasized the importance of hereditary predisposition for the origin of metastyphilitis. The pathoplasmic influence of the constitution on the symptom complex and the course of the paralysis is of much greater importance than the pathogenic influence.

Nonne of Hamburg brought out that as yet little is known concerning the action of spirochetes from the standpoint of numbers and localization. The assumption of a neurotropic action of the virus in explanation of late syphilis of the central nervous system may be regarded as settled. It is surprising that from 80 to 90 per cent of all cases of tabes and dementia paralytica developed in patients who presented up to that time only mild symptoms. It is interesting to note also the not infrequent spontaneous recoveries from syphilis and the differences presented by tabes and dementia paralytica in the various countries.

The assembly transmitted a request to the federal government to aid in the organization or further development of neurosurgical departments or clinics.

A paper by Bürger-Prinz of Leipzig dealt with the early diagnosis of hereditary psychoses on the basis of a series of cases occurring in the children's department of the Leipzig psychiatric clinic. The differentiation of so-called development crises which constituted nearly one third of the cases studied, from the endogenous psychoses causes great difficulty in dealing with juveniles. Every juvenile whose mental condition attracts attention should be kept in mind and carefully watched as a possible subject for the application of the sterilization



law In fact, children and juveniles in general should be given closer attention than they have received, particularly just before the onset of pregnancy

### Special Aid for Large Families

Through the granting of special cash benefits for children, a way has been found to lighten the burdens of parents with a large number of offspring Single cash benefits of 100 marks (\$40) for each child that has not attained the age of 16 are provided if the following conditions are fulfilled 1 The family must comprise four or more children under the age of 16 2 The parent or guardian who is responsible for the support of the children must be unable, by reason of low income or property conditions, to provide the necessary equipment for the home These sums, which will be deviated from the funds provided for federal aid to prospective married couples (*THE JOURNAL*, Dec 14, 1935, p 1999), will not be granted as loans but as lump-sum children benefits In contradistinction to the sums advanced to young couples about to marry, they need not be paid back It is thought that each month from 5,000 to 6,000 large families may be granted this aid.

### The National-Socialist Nurses' Association

The Nationalsozialistische Schwesternschaft has been organized to promote public welfare work among the national-socialists Since there is as yet no body of graduate national-socialist nurses, the association comprises the professional nurses who have followed their occupation for years, all of whom are adherents of the national-socialist world views This Nationalsozialistische Schwesternschaft has already established chapters in a number of hospitals, for example, the Rudolf Hess-Krankenhaus in Dresden The hospital in Diez (Nassau) will be the first German training center for national-socialist aids The task of these aids will be to render help in families in which the mothers are sick or in need of rest

In introducing these aids to the people the federal stadholder delivered an address in which he emphasized that hospitals should be open to every one in need of such an institution

### Increase of Occupational Diseases

According to a statement in the (official) *Reichs-Arbeitsblatt*, parallel with the upswing in the industries, the number of cases of occupational disease in Germany has increased from 7,133 up to 7,712 Pneumoconiosis is in the lead, then follow lead poisoning, disorders due to finely ground basic slag produced by the Thomas process, benzene poisoning, carbon monoxide poisoning, chronic skin disorders caused by the galvanizing process, soot, paraffin, tar, pitch, and the like, arsenic and mercury poisoning, deafness caused by noise, also disorders produced by automatic tools operated by compressed air

### Hereditary Nature of Harelip and Cleft Palate

The German sterilization law contains a paragraph formulated in general terms, which provides for the sterilization of persons affected with "severe hereditary bodily malformations" In the official commentary to this law the question as to whether harelip and cleft palate come under that head is answered in the affirmative This opinion is based on far from recent researches of various authors, according to which, in certain regions of Germany with a large amount of intermarrying and little influx of new blood, family trees are said to reveal from 20 to 25 per cent of hereditability of these two malformations In certain small sections of the Netherlands a hereditability of 45 per cent is alleged to have been observed It has also been noted that the families in question present other hereditary bodily infirmities

Dr C H Schröter of Münster (Westphalia) has recently published the results of his research on the subject He studied 255 cases with respect to the ancestry of the patients

and discovered likewise about 40 per cent of hereditability The hereditarily transmissible character that produces harelip and cleft palate acts generally in a recessive manner, but in some cases there is evidence of domination The mode of hereditary transmission is thus not fully cleared up Schröter also found an evident correlation between the cleft formations occurring in the mouth and other bodily malformations appearing either in the same individual or in blood relatives, such as cleft tongue, polydactylism, malformation of the toes hydrocephalus, torticollis and certain hereditary eye disorders In keeping with the prevailing trend in Germany, Schröter recommends that all persons with harelip and/or cleft palate whose direct ancestors or blood relatives are (or have been) affected with such malformations or with any related anomalies be sterilized

### AUSTRALIA

(From Our Regular Correspondent)

Oct. 21, 1935.

### Annual Meeting of British Medical Association at Melbourne

Abstracts of other papers read at the annual meeting of the British Medical Association in Melbourne appeared in *THE JOURNAL*, Nov. 16 and 30, 1935

### THE CAUSES AND DEFINITION OF BLINDNESS

Sir James Barrett of Melbourne said that in the period 1901-1923 the most common causes of blindness were optic atrophy, choroiditis and ophthalmia neonatorum During the period 1923-1933 two major increases had taken place—in myopia and in retinitis pigmentosa Ophthalmia neonatorum had definitely decreased and trachoma showed a slight decrease The increase of blindness due to retinitis pigmentosa and myopia was most difficult to control As regards the definition of blindness, at the Australasian Medical Congress (British Medical Association) held in Hobart in 1934 it had been agreed that blindness meant inability to count fingers at a distance of 1 meter in any circumstances But between blindness and vision so defective as to render the subject unable to follow any occupation involving vision there was a gap It had been agreed that partial blindness (or, as Sir James Barrett preferred to call it, partial sightedness) was the possession of vision of 6/60 or less in any circumstances but that nystagmus or contraction of the field might involve in odd cases the possession of a somewhat higher standard

### IRIDOCYCLITIS

In Australia, tuberculous infection could be held responsible for even fewer cases of the condition than in England, while syphilis in Australia, as in most countries, was decreasing every year Dr Leonard Mitchell of Melbourne discussed this condition before the section of ophthalmology

### GLAUCOMA

It would be amusing if it were not humiliating to find that with each succeeding enthusiasm in physiology and pathology a new hypothesis was put forward to explain glaucoma It was known that glaucoma was a disease state not merely of the eye but of the body Attempts had been made to unravel all the mysteries of glaucoma in terms of colloid swelling With the vogue of histamine, the causation was assumed in terms of this panergic agent Vitamin deficiency had a few stalwart adherents The present was an era of cholinergic and adrenergic humoral activation, and glaucoma had not escaped In the eyeball, exclusive of fluctuations of narrow amplitude, there was a remarkable constancy of pressure in health, and the fundamental problem of ocular tension, namely, the regulation of a standard pressure, was the problem that called for investigation Thus did Prof W A Osborne of Melbourne sum up the modern outlook on glaucoma to the section of ophthalmology

Dr H M Traquair of Edinburgh considered that the most important symptom was the presence of recurring dimness of vision in one eye. The beginning of glaucoma was without symptoms. The routine use of the tonometer might detect an early tendency. He placed the normal limit somewhat lower than that suggested by Cridland as the standard for the original Schiötz tonometer, he was very suspicious of eyes showing a tension greater than 22. He had been interested in the depression of the central field, the 'barring of the blind spot,' described by Sinclair in 1906 as an early sign of glaucoma, the so called Bjerrum symptom. This was undoubtedly the precursor of the arcuate scotoma, but the latter did not appear to grow out of the barring but rather to arise independently. He believed that the statement that enlargement of the blind spot was a pathognomonic sign of early glaucoma was unacceptable and that this misconception had arisen because of the employment of unduly large test objects. Glaucoma was to be diagnosed by the whole clinical picture, not by one sign alone, the only pathognomonic sign was increased tension and this was not readily elicited in all cases.

#### PLACENTA PRAEVIA

Of all obstetric operations used in the treatment of placenta praevia, except that of bringing down a leg in breech presentation, that of cesarean section has the lowest maternal and fetal mortality rate. To pack the vagina is dangerous and is unjustified except to facilitate transport. Sir Comyns Berkeley presented statistics covering 382,000 women, in which group the incidence was 1.13 per cent, with a death rate of 6 per cent. The diagnosis was first made between the thirty-sixth and fortieth week in 57.3 per cent, the greatest incidence being at the fortieth week. The fetal survival rate was 47 per cent. Complete placenta praevia occurred in 24.7 per cent, and the incomplete and lateral types in 42.9 and 32.4 per cent, respectively. A warning was issued against pelvic examination being made unless proper treatment could be instituted at once. Cesarean hysterectomy should be avoided if possible. Attention was directed to the danger of rapid delivery, in that tentorial tears were found in 50 per cent of infantile deaths. The condition of lateral placenta praevia was undoubtedly over-treated, since statistics reveal no fewer than thirty-five methods of treatment. The safest plan was to allow labor to progress and not to intervene. Such a plan resulted in a maternal mortality of less than 1 per cent, with 71.7 per cent of living children. Dr A M Wilson of Melbourne reported a death rate of 2.5 per cent in 103 cases treated since 1931. Packing the vagina raised the morbidity from 20 per cent to 50 per cent and should therefore be used only as a temporary measure.

#### THE LATE TOXEMIAS OF PREGNANCY

The definite possibility that the toxemias of pregnancy were a dietary deficiency disease was raised by Dr John S Fairbairn of London. The contention, however, that eclampsia might be prevented was merely an intelligent anticipation. There existed no method of preventing the onset of toxemic states, and the onset of convulsions might be so rapid as to preclude treatment. The severity of toxemia in pregnancy was of small importance as compared with its duration. It was therefore a matter of importance to terminate pregnancy before permanent damage was done. The presence of albumin in the urine during labor was caused in a similar way to the albuminuria associated with exercise in the young athlete. Dr F Brown Craig of Sydney had noted a seasonal increase in the toxemias, the incidence being 15.5 per cent greater in the cold than in the warm months. He considered that intestinal toxemia and constipation favored pregnancy toxemia. Dr H S Jacobs weighed his patients every month during their pregnancy. An increase of more than 5 pounds (2.3 Kg) a month was a warning of an approaching toxemia.

#### REMOTE RESULTS OF PUERPERAL SEPSIS

Dr Arthur Sherwin of Melbourne considered that puerperal infection did not usually spread by way of the lumen of the tubes. If infected patients were treated expectantly, the great majority who recovered would have normal adnexal function.

#### THE TREATMENT OF MAMMARY CANCER

No valid claim could be made for the routine use of radiation in the treatment of primary growth in place of an operative procedure. Such was the conclusion of Dr H M Moran of Sydney, president of the section of radiology and radiotherapeutics in a discussion on the treatment of mammary cancer. Apart from a few highly anaplastic types, the overwhelming majority of the widely differing growths are not radiosensitive to a degree to justify the expectation of cure by irradiation alone. The danger of injury to the underlying lung precluded the effective use of a frontal attack and made tangential irradiation necessary. The chief result obtained was a reduction in the volume of the tumor, dependent either on the sensitiveness of certain elements or on the vascular changes induced. This shrinking, however, should not be allowed to give the fleeting illusion of a cure. Not infrequently a period of apparent calm was succeeded after an interval of a few months by an increased activity. Any evaluation of the prolongation of life that might appear to have been obtained should be considered in the light of the natural duration of life with untreated breast cancer. If external irradiation was supplemented by some form of interstitial technic, complete sterilization of the growth was rarely, if ever, realized. It was essential that an adequate dose of radiation should be delivered to the utmost parts of the tumor, and this was an extremely difficult proposition. The idea that by creating a barrage of fibrous tissue around or across the path of a growth, it was possible to oppose its march successfully or circumscribe its action was entirely erroneous. The cancer cell that was not immediately or shortly destroyed would continue to threaten the security of the patient, and an associated fibrosis merely frustrated the radiotherapist, for whom fibrous tissue must represent a degradation of the stroma and a hindrance to cure. The defect of interstitial technic when dealing with any but small areas was the risk of leaving a loophole in a widely flung net. There was one contraindication to the practice of surgery, and that was the existence of a rapidly growing, highly malignant carcinoma, especially when it occurred in pregnancy or during the puerperium. Surgical intervention quickened the pace and extended the line of attack. Since there was unity neither of structure nor of behavior in mammary cancer, there could be no uniformity of treatment. As regards biopsy, he considered that the only safe procedure was a complete removal of the tumor mass preceded by irradiation. It was preferable to operate immediately after irradiation before the full tide of reaction set in.

#### PINK DISEASE

Priority was accorded to Herr Selter of Solingen, the Ruhr, for the first description of pink disease, at the 1903 congress in Cassel. Dr Ian Wood and Dr Jeffreys Wood of Melbourne opened the discussion on this disease, which is also known as Swift's disease after the first Australian to describe the syndrome—Dr Swift of Adelaide. The predominating symptoms are sweating, photophobia, insomnia, anorexia and red swollen hands and feet. The disease is named from the last mentioned symptom. A synonym for the condition is erythredema. Males and females are attacked in almost equal numbers. Apparently the disease, for reasons unknown, is more common in Australia than elsewhere. When first attacked the children are between 9 and 18 months of age and a slight rise of temperature occurs at the onset. In a few cases no redness developed in the extremities. There is a natural ten-

dency for the condition to improve during the third month. Treatment in the open air is of the greatest value, and, if possible, the children should sleep on open balconies. The body should be lightly clad both day and night. Silk or cotton next to the skin was much more comfortable than wool. In regard to local applications, a tepid bath should be given night and morning and after careful drying with a soft sterile towel the skin of the whole body gently rubbed with denatured alcohol. This should be followed by a liberal dusting with talc or with zinc and starch powder. The application of denatured alcohol kept the moist perspiring skin free from coccic infections. Infections of the mouth were very serious. The mouth could be kept fairly sterile by letting the child chew on a swab of absorbent cotton fastened in sterile gauze moistened with hydrogen peroxide (1 part to 4 of water). Owing to the thirst that was such a prominent feature, milk would usually be taken in fairly liberal quantities. Raw eggs might be mixed with the milk. Raw vegetables such as lettuce, and also raw fruits of all kinds, might be given with advantage. The danger of death lay in infections. Sudden death occasionally occurred without apparent cause. Every known method of culture for virus infection had been unsuccessfully tried. Dr Robert Hutchison of London said that there had been only thirty authentic cases in England during the past five years. It was an exasperating condition, the cause was baffling, and the treatment was unsatisfactory. Neither of the two theories—deficiency and infections—appealed to him. Professor Peters, in Oxford, was investigating certain fractions of the vitamin B complex. Dr Edgar Stephen of Sydney drew attention to the glassy appearance of the centers of ossification as shown by roentgenologic investigation as a factor in the diagnosis. These appearances were similar to those of scurvy. He had found chlorbutanol useful in the treatment of the insomnia. On the theory that the disease was analogous to poliomyelitis, Dr Robert Southby of Melbourne had used pooled normal human serum, with encouraging results.

#### THE PSYCHOSES OF ADOLESCENCE

There was urgent need for trained observation of the "nervous child" up to maturity, to ascertain how far the early manifestations of instability were actual precursors of insanity. Prof W S Dawson of Sydney opened the discussion on the psychoses of adolescence in the section of neurology and psychologic medicine. While there was great difficulty in placing cases into one or another group of the insanities of adolescence the occurrence of a sustained exaggeration of affect in the direction of depression or elation with consistent ideation and conduct was strongly in favor of the manic-depressive syndrome with a good prognosis for the attack, although there might be a recurrence. Correction and treatment of physical abnormalities could not yet be said to be productive of any striking results. Beyond attention to general health, the judicious prescription of occupation and recreation was of undoubted value, and the maintenance of psychologic contact between physician and patient was another important aspect of treatment. Especially in early cases of dementia praecox, institutional care should not be sought unless the home environment was clearly unsuitable. It was most desirable to keep these patients socialized as long as possible, provided their conduct was not grossly disordered. The recognition and correction of anomalies of character and temperament during the school years and the special observation of children of psychotic parents should be attempted as a means of preventing definite mental breakdown.

Prof K. H. Bouman of Amsterdam advanced the thesis that dementia praecox had a physical basis. He correlated the work of Mott and others on the degeneration of the endocrine glands in schizophrenic patients with his own studies of the postmortem appearances in the brains of schizophrenic patients. Micro-

scopic examination revealed definite loss of cellular structure in various layers of the cerebral cortex. The loss of structure showed a definite distribution.

Dr Clive Farran-Ridge of Melbourne discussed the prevention of dementia praecox by measures other than eugenics. Good bodily health was of paramount importance, since time and again one saw young persons who, one felt, might have avoided a breakdown if their bodily health had not become impaired. Predisposed children should be sent to a day school rather than a boarding school, to insure their obtaining good food, undisturbed rest at night, and help and guidance when they needed it. Their natural timidity and lack of self-confidence should be combated by having them taught boxing and ju-jitsu, elocution and public speaking. They were apt to take unreasonable dislikes to certain persons and were liable to be seriously damaged mentally by bullies and psychopathic personalities among their school fellows, and by unsympathetic, sarcastic and nonunderstanding schoolmasters. For these reasons it might sometimes prove necessary to remove them from school. It was undesirable that children with potential dementia praecox should become morbidly interested in religion, and formal religious instruction should play a subordinate part in their education. The truth of the proverb that God helped those who helped themselves should be impressed on them, for they were only too apt to make prayer a substitute for effort. They should be helped in every way in dealing with the problems of sex. Chastity should be preached to them, if only for the reason that they were not of the stuff that libertines were made of. A wise choice of occupation was of great importance. In general, the more regular and routine their work was, provided always it was congenial, the more suitable it would be. They should be trained from an early age to face facts and should be discouraged from morbid day-dreaming.

Dr J. F. Williams of Melbourne conducts a psychiatric clinic at the children's hospital, which has a nursery school attached where adult interference is reduced to a minimum. Many of these children suffer from prepsychotic states, but under these conditions personality defects had become quickly modified, even those children showing negativism and other behavior abnormalities in greater degree than was shown in a normal range and who were probably prepsychotic had recovered. Nursery schools were very important for the management of difficult children. In Dr Williams' clinic the nursery school is so arranged that the children's behavior can be studied without their being conscious of being watched.

### Marriages

GEORGE THOMAS MCCUTCHEN to Miss Elizabeth Barnwell Heyward, both of Columbia, S C, Oct 15, 1935

WILLIAM ELLEDGE SELBY, Charlotte, N C, to Miss Sarah Elizabeth Norwood of Norwood, Oct 17, 1935

RUSSELL BREWER SCOBIE, New York, to Miss Katherine Wolcott Peck of Hartford, Conn, Oct 5 1935

WYMAN PLATTE SLOAN, Atlanta, Ga, to Mrs Helen Harris Sloan of McDonough at Decatur, Oct 1, 1935

HARRY M PERSING JR., Philadelphia to Miss Dorothy A. White of Wilkes-Barre, Pa. June 5, 1935

WILLIS TUGGLE McCURDY, Stone Mountain, Ga, to Miss Elsie Hamilton of Augusta in October 1935

ROBERT LINDSAY McMILLAN to Miss Moselle Wilkinson both of Durham, N C, in November 1935

DUNCAN T McEVAN, Orlando, Fla, to Miss Marion Fries of Brooklyn in October 1935

JOSEPHUS REYNOLDS, Los Angeles, to Dr. HELEN TAUSEN of New York, Dec. 2, 1935

AARON SAMUEL LEVEN to Miss Leah Rose, both of Chicago, Nov 30, 1935

## Deaths

**Edward B Heckel** ☉ chairman of the Board of Trustees of the American Medical Association from 1925 to 1932 died at his home in Pittsburgh on Dec 23, 1935, of pneumonia. Dr Heckel was born in Pittsburgh, Jan. 30, 1865. After graduation from Allegheny College he received his master of arts degree in 1889 and then completed his medical education in Bellevue Hospital Medical College, graduating in 1890. Early in his career he became interested in medical organization and was elected successively president of the Allegheny County Medical Society and of the Medical Society of the State of Pennsylvania. He also served as president of the Pittsburgh Ophthalmologic Society and of the Pittsburgh Academy of Medicine.

In the House of Delegates of the American Medical Association Dr Heckel held membership in 1906-1907, 1917-1920, 1922 and 1924. In 1925 he was elected a member of the Board of Trustees and became its chairman, serving with the utmost distinction in this capacity until the completion of his term in 1932. During his service on the Board, the affairs of the Association were conducted with exceptional administrative ability and advanced remarkably. As chairman he earned not only the respect but also the affection of those who served with him.

Dr Heckel's competence in ophthalmology was recognized by his election to the chairmanship of the Section on Ophthalmology of the American Medical Association in 1928. In that year also the Pittsburgh Ophthalmologic Society gave a dinner in recognition of his service to organized medicine and in celebration of his fifteenth consecutive year as president of that organization. Guests of honor on this occasion included distinguished ophthalmologists and high officials in medical organization from all over the country.

Dr Heckel was honored with the degree of doctor of science by Allegheny College, his alma mater in 1930. He was a member of the Academy of Ophthalmology and Otolaryngology, of the American Ophthalmological Society and of similar specialistic bodies, contributing of his service to all of them. He was ophthalmologist to the Allegheny General Hospital, the Pennsylvania Railroad, the Carnegie Steel Company and the United States Pension Board. He served also as a member of the board of managers of the Allegheny County Industrial and Training School for Boys and as a member of the board of regents of University of Pittsburgh. In his death medicine loses a wise and experienced counselor. Those who knew him mourn the loss of a generous, an understanding and a loyal friend.

**Emmett Pipkin North** ☉ for many years a devoted worker in organized medicine, died at his home in St. Louis, Dec. 28, 1935, after an illness of several weeks. Dr North was born in Labadie Mo., Aug. 13, 1877. After graduation from Central College in Missouri he received his M.D. degree from the Beaumont Medical College in St. Louis in 1900. He became assistant physician to the St. Louis Hospital and thereafter house surgeon to the Missouri Pacific Railway Hospital. During 1903-1904 he was associate ophthalmologist to St. John's Hospital. In 1933 he became assistant professor of ophthalmology in the St. Louis University School of Medicine. Dr North was also ophthalmologist of the Missouri Pacific Railway, the Masonic Hospital, the Baltimore and Ohio Railroad and many other public utilities. He was president of the Missouri State Board of Health from 1917 to 1925 and also from 1933 to 1935. During the war he served as lieutenant-commander in the United States Naval Reserve Corps. In organized medicine he

was exceedingly active, serving as president of the St. Louis Medical Society in 1921, of the Missouri State Medical Association in 1925, and of the Missouri Pacific Railway Physicians Association in 1931. In the American Medical Association he was a member of the House of Delegates during 1923 and 1924 and from 1926 through 1935. He was also a member of the Council on Medical Education and Hospitals from 1927 through 1934 and a member of the Judicial Council since 1934. In every public office he held Dr North was active in behalf of the advancement of scientific medicine. He was a nephew of Dr. Jabez North Jackson, former president of the American Medical Association. His friends in the medical profession throughout the nation were legion.

**Leonard Freeman** ☉ Denver, Medical College of Ohio Cincinnati, 1886, professor of surgery, University of Colorado School of Medicine, professor of surgery, Woman's Medical College, Cincinnati, 1888-1894, past president of the Colorado State Medical Society, member and past vice president of the American Surgical Association, member and past president of the Western Surgical Association, past president of the Denver City and County Medical Society and the Denver Clinical and

Pathological Society fellow, and at one time member of the board of governors, of the American College of Surgeons member of the International Surgical Association surgeon to St. Joseph's Hospital Colorado General Hospital, Denver City and County Hospital, Children's Hospital and the National Jewish Hospital for Consumptives, author of chapters on surgical subjects in Keen's "System of Surgery," Klebs' "Tuberculosis," Ochsner's "Surgical Diagnosis and Treatment," Peterson and Haines' "Legal Medicine and Toxicology" and of many articles on surgical subjects in the periodical literature, aged 75, died, Dec. 27, 1935 of coronary thrombosis.

**Frederick Robert Zeit**, Chicago, Western Reserve University Medical Department, Cleveland, 1887, assistant in pathology and bacteriology in 1900, professor of bacteriology and clinical pathology in 1901 and 1902, from 1903 to 1913 professor of pathology and bacteriology and since 1913 professor of pathology, Northwestern University Medical School, founder of the Frederick Robert Zeit Museum of Pathology, Northwestern University, professor of pathology and bacteriology, Post-Graduate Medical School of Chicago 1900-1919,

collaborator and first assistant of Prof. Edwin Klebs, 1897-1900 member of the American Association of Pathologists and Bacteriologists, president of the Chicago Pathological Society, 1904-1905, consulting pathologist to the Wesley and Grant hospitals, aged 71, died, Dec. 5, 1935, in Coronado, Calif.

**Julian Meredith Baker**, Tarboro, N. C., University of Maryland School of Medicine, Baltimore, 1879, member, past president and secretary of the Medical Society of the State of North Carolina, formerly member of the state board of medical examiners and state board of health, past president of the Edgecombe County Medical Society for many years chairman of the county board of education fellow of the American College of Surgeons on the staff of the Edgecombe General Hospital aged 77, died, Oct. 19, 1935 of coronary thrombosis.

**Marion Mansfield Roland** ☉ Oklahoma City, Jefferson Medical College of Philadelphia 1908, associate professor of dermatology and radiotherapy, University of Oklahoma School of Medicine member of the Radiological Society of North America, served during the World War on the staff of the State University Hospital on the consultant staff of the Wesley Hospital and the Oklahoma City General Hospital, aged 53, died, Dec. 1, 1935, of coronary thrombosis while on a train on his way to Detroit to attend a meeting.



EDWARD B. HECKEL, M.D., 1865-1935

**Richard Miller Acton Davis** ♂ Salem, N. J., University of Pennsylvania Department of Medicine, Philadelphia, 1896, past president of the Salem County Medical Society, served during the World War as a medical examiner for a draft board, on the staff of the Salem County Memorial Hospital, aged 61, died Nov. 6, 1935, of angina pectoris.

**Harry Edgar Braun** ♂ Houston, Texas, University Medical College of Kansas City, Mo., 1911, member of the American Society of Clinical Pathologists, served during the World War, on the staff of the Jefferson Davis Hospital, aged 55, died, Nov. 9, 1935, in the Brazos Valley Sanitarium, Navasota, of coronary occlusion.

**Israel Lemieux**, Grand Forks, N. D., University of Bishop College Faculty of Medicine, Montreal, Que., Canada, 1874, formerly mayor of Red Lake Falls, secretary and member of the school board, and county physician and city health officer, aged 83, died, Oct. 15, 1935, of hypostatic congestion of the lungs.

**John P. Grisard**, Winchester, Tenn., University of Tennessee Medical Department, 1901, member of the Tennessee State Medical Association, secretary of the Franklin County Medical Society, served during the World War as chief examiner of a local board, aged 57, died, Nov. 26, 1935.

**John Lowell Bacon**, Southboro, Mass., Hahnemann Medical College and Hospital of Philadelphia, 1897, member of the Massachusetts Medical Society, chairman of the board of health of Southboro, aged 59, on the staff of the Framingham-Union Hospital, Framingham, where he died, Nov. 21, 1935.

**Arnold E. Strauss**, Lansing, Mich., Christian Albrechts-Universität Medizinische Fakultät, Kiel, Prussia, Germany, 1914, aged 46, was burned to death Oct. 18, 1935, on a highway near Sayre, Okla., as the result of an explosion of gasoline while his car was being filled.

**William Joseph Butler** ♂ Chicago, Rush Medical College, Chicago, 1894, formerly attending physician to the Frances E. Willard Hospital and consulting physician to the Hospital of St. Anthony de Padua, aged 63, died, Nov. 7, 1935, in Gainesville, Fla., of cerebral hemorrhage.

**William R. Eckhardt**, Houston, Texas, Hospital College of Medicine, Louisville, Ky., 1887, Tulane University of Louisiana Medical Department, New Orleans, 1888, member of the State Medical Association of Texas, aged 69, died, Nov. 13, 1935, in St. Joseph's Infirmary.

**Robert William Hockman**, Addis Ababa, Abyssinia, Africa, Northwestern University Medical School, Chicago, 1933, United Presbyterian missionary formerly of Wheaton, Ill., aged 29, was killed, Dec. 13, 1935, while handling a bomb which exploded.

**George Henry Towle**, New Market, N. H., University of Vermont College of Medicine, Burlington 1900, member of the New Hampshire Medical Society, member of the school board, aged 63, died, Oct. 29, 1935, in the Exeter (N. H.) Hospital of cerebral hemorrhage.

**Alexander McNeil Blair** ♂ Southern Pines, N. C., Niagara University Medical Department, Buffalo 1897, president of the Moore County Medical Society, fellow of the American College of Physicians, aged 62, died, Nov. 26, 1935, of chronic myocarditis.

**George John Baker**, Detroit, Detroit College of Medicine, 1909, member of the Michigan State Medical Society, on the staff of St. Joseph Mercy Hospital, aged 56, died, Dec. 1, 1935, in St. Joseph's Hospital, Ann Arbor, of parenchymatous nephritis.

**John L. Sears**, El Paso, Texas, John A. Creighton Medical College, Omaha, 1909, served during the World War, aged 48, died, Oct. 4, 1935, in the Providence Hospital, of streptococcal infection, otitis media and mastoiditis.

**James Joseph Shay** ♂ Brooklyn, Long Island College Hospital, Brooklyn, 1912, fellow of the American College of Surgeons, on the staffs of St. Anthony's and St. Peter's hospitals, aged 56, died, Nov. 1, 1935, of heart disease.

**Archibald Patterson Knight**, Kingston, Ont., Canada, Victoria University Medical Department, Coburg, 1886, emeritus professor of physiology, Queen's University Faculty of Medicine, aged 86, died, Oct. 19, 1935.

**Laurence Frederick Vincent Sutton**, Mazeppa, Minn., College of Physicians and Surgeons, Baltimore, 1906, member of the Minnesota State Medical Association, aged 56, died suddenly, Dec. 4, 1935, of heart disease.

**Joseph W. Bastian** ♂ Wilmington, Del., Baltimore Medical College, 1896, past president of the New Castle County Medical Society, aged 67, on the staff of the Delaware Hospital where he died, Dec. 7, 1935, of septicemia.

**John Calvin Silliman**, Palo Alto, Calif., Columbia University College of Physicians and Surgeons, New York, 1904, member of the California Medical Association, aged 57, died, Oct. 27, 1935, of a gunshot wound.

**Charles Harrison Dixon**, Moberly, Mo., Beaumont Hospital Medical College, St. Louis, 1899, member of the Missouri State Medical Association, aged 67, died, Nov. 8, 1935, as the result of an automobile accident.

**Russell Pemberton**, Monrovia, Calif., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1894, aged 65, died, Oct. 22, 1935, of chronic myocarditis and prostatic abscess.

**David Edward Seashore** ♂ Duluth, Minn., University of Minnesota Medical School, Minneapolis, 1902, fellow of the American College of Surgeons, aged 60, died suddenly, Nov. 4, 1935, of heart disease.

**James Donald Baird**, Barnardsville, N. C., Lincoln Memorial University Medical Department, Knoxville, Tenn., 1912, aged 48, died, Oct. 10, 1935, of acute perforative appendicitis.

**Orson Bailey Spencer**, Kankakee, Ill., Western Homoeopathic College, Cleveland 1868, member of the Illinois State Medical Society, aged 90, died, Dec. 3, 1935, of cerebral hemorrhage.

**Joseph Edward Taylor**, Danville, Va., Medical College of Virginia, Richmond, 1893, for many years city coroner and jail physician, aged 63, died, Oct. 24, 1935, of pulmonary tuberculosis.

**Lewis Reed Souder**, Ventnor, N. J., Jefferson Medical College of Philadelphia, 1887, for many years county medical examiner, aged 75, died, Nov. 4, 1935, of coronary thrombosis.

**Victor H. Esch**, Washington, D. C., Georgetown University School of Medicine, Washington, 1905, aged 63, died, Dec. 8, 1935, of cerebral hemorrhage and arteriosclerosis.

**Joseph Hall**, Westfield, Ill., Medical College of Indiana, Indianapolis, 1894, member of the Illinois State Medical Society, aged 86, died, Nov. 12, 1935, of heart disease.

**George Francis Whitaker**, Baltimore, Maryland Medical College, Baltimore 1909, aged 58, died, Nov. 23, 1935, in the University Hospital of arteriosclerotic heart disease.

**John R. Forst** ♂ Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1893, aged 65, died, Nov. 1, 1935, of pernicious anemia and myocarditis.

**John M. Rains** ♂ Willmar, Minn., Victoria University Medical Department, Coburg, Ont., Canada, 1870, aged 80, died, Nov. 10, 1935, of cardiac decompensation.

**Stephen Martindale Roberts**, Nantucket, Mass., University of Vermont College of Medicine, Burlington 1866, aged 91, died, Oct. 30, 1935, of bronchopneumonia.

**Leo Adelmo Schroeder** ♂ Los Angeles, University of Southern California College of Medicine, Los Angeles, 1907, aged 55, died, Oct. 29, 1935, of heart disease.

**Hermann Bosch**, New Haven, Conn., Medizinische Fakultät der Universität Leipzig, Saxony, Germany, 1881, aged 78, died, Oct. 2, 1935, of cerebral hemorrhage.

**Walter S. Eubanks**, Greenwood, S. C., College of Physicians and Surgeons, Baltimore, 1891, aged 66, died, Dec. 6, 1935, in North Augusta, of pneumonia.

**Gregory Joseph Costigan**, New York, University of the City of New York Medical Department, 1892, aged 67, died, Nov. 20, 1935, of chronic myocarditis.

**Benjamin Van Magness**, Medford, Mass., University of Vermont College of Medicine, Burlington, 1900, aged 60, died, Oct. 4, 1935, of carcinoma of the jaw.

**Mark Douglass Batties**, Indianapolis, Indiana University School of Medicine, Indianapolis, 1910, aged 49, died Oct. 9, 1935, of cardiovascular renal disease.

**Andrew Rice Judson**, Edgewater, Colo., Jefferson Medical College of Philadelphia, 1885, aged 73, died, Oct. 15, 1935, in New York, of heart disease.

**Judson Liftchild**, Oakland, Calif., California Medical College, San Francisco, 1893, aged 69, died, Oct. 20, 1935, of cerebral hemorrhage.

**Orland W. Bean**, Salem, Ore., Willamette University Medical Department, Salem, 1902, aged 69, died, Oct. 12, 1935, of intestinal obstruction.

**Jacob Phares Teter**, Indianapolis, Physio-Medical College of Indianapolis, 1906, aged 65, died, Oct. 27, 1935, of mitral insufficiency.



## Bureau of Investigation

WILLIAM HOWARD HAY

### An Interesting Letter from an Ex-Patient

In this department of THE JOURNAL for Feb 25, 1933, a two page article was published on William Howard Hay, M.D., and his peculiar theories and methods. It was there brought out that Dr Hay was said by the local medical society of which he had been a member to have resigned in 1930 just before charges of unethical advertising were to be preferred against him. Dr Hay has conducted, respectively, such institutions as the "Hay Rest Cure," the "East Aurora Sun and Diet Sanatorium," "Pocono Hay-ven" and more recently Briarcliff Manor. All of these seem to have been places where the peculiar ideas that Dr Hay holds regarding medical and dietetic treatment could be turned to commercial account. For those who are interested in learning what THE JOURNAL had to say about Hay in the article already referred to, a reprint can be obtained by sending a three-cent stamp to the Bureau of Investigation of the American Medical Association.

A letter has recently been received from a layman in an eastern state, a man obviously above the average in intelligence, who sends the Bureau of Investigation a copy of the letter that he recently (November 1935) wrote to William Howard Hay. The letter contains so much information of interest that we offer no apology for reproducing it practically in full. Our correspondent has stated that while he has no objection to the publication of his letter, he does not wish his name to be used. The letter follows:

*Doctor Hay*—I have been a sufferer of diabetes for about two years and on the recommendation of Mr Charles E Scarlett of this city, I wrote you on July 17th, stating my condition. I received a reply from you under date of July 19th, from which I quote the following:

My Dear Mr. ———— —Replying to your letter you undoubtedly realize that diabetes can be permanently corrected if treated in a constructive way. I do not think that you have been using insulin too long to give you any trouble although this may have to be eliminated gradually when starting.

'On the strength of this letter, I went to Briarcliff Manor and talked with Dr H Van Renken Stam, who at the time was in charge of all patients taking the Hay treatment. Doctor Van Renken Stam assured me that there was no reason for me to be taking insulin and if I would come to Briarcliff Manor and take the treatment, which at the time he called nothing but common sense, that I would be able to do away with insulin and that by carrying out instructions which would be given me upon leaving the Manor after taking the Hay treatment, which consisted of four weeks, that I would never have to use insulin again and I would be cured of my diabetes.

'Following Doctor Van Renken Stam's advice, I went to Briarcliff on the 23d of July and stayed until the 20th of August, which was exactly four weeks, the full amount of time required for the treatment, and not once during this time was my blood sugar taken. During the four week period at Briarcliff, I had three personal interviews with you and on the last of these which was on the 19th of August, the day before I left Briarcliff, you assured me that I would never have to use insulin again. Naturally I felt very much elated over this statement of yours and I came home with the belief that this was true, although my urine was still showing about four per cent sugar and I had lost considerable weight.

'I lived up to my diet very rigidly and followed Doctor Van Renken Stam's instructions as to the purges and colonic treatments and on August 27th I wrote to Doctor Van Renken Stam from which I quote the following:

"I told you before leaving that Doctor Hay told me to test my urine only once a week but I have been testing it every morning as soon as I get up and it is still showing sugar to the extent of about three or four per cent but as yet I have not given up hope and am going to continue on my diet of cream soup vegetable or fruit salad and fruit for dessert. Have not eaten any cooked vegetables at all. This morning I took my first purge and tomorrow I have arranged for a colonic treatment at Roland Forlifers the people whom Walter Donald wrote to for me.

Finally after waiting until September 11th, sixteen days after writing Doctor Van Renken Stam, I received his reply,

dated September 9th, in which he gave me the excuse that he had been very busy and had not had time to write and his only instructions were:

"Are you doing what you are told? You hammer on not having had any cooked or rather steamed vegetables—why not? Go ahead and eat but eat the right way and nothing containing sweets and don't have any protein or starch for a while yet. Remember all food taken in your stomach is the material your body cells are made up of and neutral alkaline forming food is your speed for some time to come.

"During all this time, I kept losing more weight and my urine sugar still stayed at about four per cent, but I still lived up to all instructions. On September 21st, I wrote Doctor Van Renken Stam another letter, from which I quote the following:

I have been sticking to my alkaline diet eating nothing but soup vegetable or fruit salad only one steamed vegetable, fruit dessert and bacon once a day. I do not know why but as yet my sugar has not come down although I am feeling fine even though I have lost a little weight. Am down to 139 stripped. When I left Briarcliff you told me to take a colonic treatment once a week for two weeks preceded by a purge and then a colonic treatment every two weeks for a month preceded by a purge. I received a treatment on September 18th, and my next colonic is to be on the 3d of October. Please advise me as to how long I should wait before taking the next colonic and tell me why my sugar is not down.

"Up to the present time, I have not received an answer to the above. My reason for explaining everything in detail is to show you as well as the American Medical Association that I have carried out all instructions which were given me and by doing so it almost cost me my life, to say nothing of the time and money spent at Briarcliff.

"Thank God that I came to my senses in time and called in my medical doctor who found me with a very bad case of acidosis and a blood sugar of nearly three hundred. I was at once put back on insulin and compelled to stay in a hospital for three weeks in order to regain my health and am only now just beginning to get back to normal. While the representations that the Hay System is a cure for diabetes are far from the truth, as my unfortunate experience convinces me, the indifference on the part of those in charge of your institution in answering communications and advising as to further diet and treatment is most reprehensible and borders on criminal negligence.

"I would be false to myself if I failed to give expression to my own sad experience and by remaining silent permit other unfortunates to jeopardize their health or probably life itself, and deem it my duty to humanity to bring these facts to the attention of the American Medical Association. It may be that you really believe in what you pretend to be able to do, but with the facts as herein stated, I do not see how you can continue without doing violence to your conscience."

### MISBRANDED "PATENT MEDICINES"

Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States  
Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product.]

*Joyz Maté*.—International Maté Co Inc, New York Composition: Common maté (Paraguay tea). For fatigue, etc. Fraudulent therapeutic claims.—[A J 22964 April 1935]

*Wonder Overhaul Tonic*.—Fulton Health Institute, Brooklyn. Composition: Essentially sodium salicylate baking soda plant drug extracts including a laxative glycerin alcohol (11 per cent by volume) and water peppermint flavored. For debility rheumatism indigestion etc. Fraudulent therapeutic claims.—[A J 22965 April 1935]

*Speedway Liniment*.—Speedway Remedy Co Shelby Ohio. Composition: Essentially small amounts of volatile oils including those of almond eucalyptol menthol and wintergreen with alcohol (49 per cent by volume) and water colored green. Fraudulent therapeutic claims.—[N J 22966 April 1935]

*Glycan Foot Rub*.—Glycan Laboratories Inc, Philadelphia. Composition: Essentially salicylic acid, a plant drug extract such as cannabis (about 1.5 per cent) a small amount of borax with soap stearic acid and water (approximately 73 per cent) and perfume. For swollen feet, rheumatic joints varicose veins warts etc. Fraudulent therapeutic claims.—[A J 22967 April 1935]



**Orange Ex O Digestant and Tonic**—L. Wilzin Tonkawa Okla. Composition Phenolphthalein pepsin glycerin sugar alcohol and water. For stomach blood liver nerve and female disorders. Misbranded because represented to be only of vegetable and animal origin and non injurious whereas its laxative effect would depend on a synthetic drug phenolphthalein which further might be injurious misbranded also because of fraudulent therapeutic claims.—[N J 22962 April 1935]

**Sulfox**—Sulfox Mfg Co. Mansfield Ohio. Composition Sulfuric acid about 0.3 per cent sulfur dioxide and over 99 per cent of water. For germs stomach trouble female complaints blood poisoning etc. Fraudulent therapeutic claims.—[N J 22968 April 1935]

**Fagisote**—Olivoint Chemical Co. San Francisco. Composition Essentially a lime water solution of wood creosote plus glycerin. For tuberculosis pneumonia typhoid fever scarlet fever etc. Fraudulent therapeutic claims.—[N J 22969 April 1935]

**Seven Barks**—Lyman Brown New York. Composition Essentially plant drug extracts in dilute acetic acid. For indigestion rheumatism liver and kidney disorders etc. Misbranded because of declaration Alcohol 734 Per Cent whereas only a trace was found also because of fraudulent therapeutic claims.—[N J 22971 April 1935]

**Fenner's Golden Relief**—S. C. Wells & Co. LeRoy N. Y. Composition Essentially guaiac myrrh red pepper extract ammonia chloroform ether volatile oils including camphor turpentine and sassafras with alcohol and water. For colic diarrhea lumbago neuritis etc. Fraudulent therapeutic claims.—[N J 22972 April 1935]

**Katro Lek**—W. Wojtasinski Drug Co. Boston. Composition Essentially small amounts of iron and ammonium plant drug extracts including a laxative beef extract, sugar and water. For stomach disorders headache nervousness etc. Fraudulent therapeutic claims.—[N J 22974 April 1935]

**Pett's Salve**—Pett's Inc. Milwaukee. Composition Chiefly a wool fat sulfur (15.9 per cent) salicylic acid (8.7 per cent) and traces of a cinnamon odor. For eczema dandruff pimples etc. Fraudulent therapeutic claims.—[N J 22980 April 1935]

## Correspondence

### THE PLACE OF VEGETABLE OILS IN THE DIET

*To the Editor*—In the paper on the use of unsaturated oil in treatment of eczema by Taub and Zakon in *THE JOURNAL* Nov 23, 1935, the effects of linseed oil are compared with allergic effects of flax seed. It should be remembered in this connection that, although a man has died from eating one castor bean children have been fed castor oil for years without ricin poisoning symptoms, in fact, the proteins whether to albumins allergic proteins or otherwise are insoluble in oil and if the oil is free from sediment it is free from protein. I have observed in a general hospital in the United States Army a lieutenant given 175 cc. of castor oil within two hours without toxic effects attributed to ricin. Furthermore, I have myself drunk 20 cc. of linseed oil a day for two years without any of the untoward effects described by Taub and Zakon. Whereas linseed oil is an irritant when applied to some eczematous skins I do not believe that it has any irritating effect taken internally. Linseed oil is used as a food for babies in England. The butter fat of cow's milk is separated and the skim milk is homogenized with raw linseed oil as a food for babies.

A great deal of prejudice has appeared against the use of vegetable oils in the diet. They are practically devoid of vitamin D and unless of a yellow color they have no vitamin A effect (carotene). Oils and other fats have an important place in the diet aside from their content of vitamins. During the World War there was a great craving for fat among the populations of blockaded countries so that a minimum fat requirement was decided on by food administrative commissions. During a year's work as visiting professor in a Japanese imperial university I was much impressed by the low fat content of the Japanese diet and the great amount of fermentative dyspepsia among the Japanese. It seemed to me that men were incapacitated for long periods because of the low fat content of the diet. Since the body can synthesize fat from carbo-

hydrate, one may imagine that fat is unnecessary, and it was not until the work of the Burrs, showing that dermatitis is produced in rats on the lowest fat content in the diet obtainable, that it was absolutely proved that fat is essential in the diet. Following their work, the biologic value of different fats is being worked out in the same way as the biologic value of different proteins as essentials in the diet.

One of the important differences between fat and carbohydrate is in the alimentary canal. Fat is not attacked by bacteria to any extent and therefore its use is not influenced by the bacteriology of the intestine. On the other hand the carbohydrates (as long as they stay in the intestine) are vigorously attacked by bacteria so that in studying the course of carbohydrates in the metabolism it is necessary either to inject them intravenously or to limit oneself to those that are absorbed with great rapidity from the small intestine. In the experiment in which Stefansson lived on a meat diet for one year, most of the calories were derived from fat and not from protein. Fat furnishes 9.3 calories per gram and it does not absorb water. However, the greatly propagandized foods high in carbohydrate (such as breakfast cereal) may be more than 75 per cent water when served and the starch furnishes only 4.23 calories per gram in the absolutely dry state. Therefore it seems desirable after furnishing all the essential proteins salts and vitamins in a diet to make up the calories with fat (provided there is enough carbohydrate to prevent ketosis) and to add carbohydrates in adequate amounts only to increase the propulsion of the food to the desired extent (this probably being due to their fermentation products rather than to their direct action). And as to ketosis it must be remembered that beta-hydroxybutyric acid occurs in the urine of normal persons on normal diets, and it is only its abnormal increase that is to be avoided or encouraged. Any toxicity due to drinking linseed oil is probably due to lead in boiled linseed oil and not to the raw oil.

J. F. McCLENDON, PH.D., Minneapolis

### TREATMENT OF ACUTE ALCOHOLISM

*To the Editor*—In *THE JOURNAL*, Nov 30, 1935 Drs. L. J. Robinson and Sydney Selesnick presented an interesting and valuable discussion of the treatment of acute alcoholism with 10 per cent carbon dioxide and 90 per cent oxygen. They did not undertake to decide whether oxygen is really needed along with carbon dioxide or whether carbon dioxide alone, which is far less expensive, would not be entirely adequate.

What I wish to call attention to is however, mainly the fact that the apparatus and technique that they use is that which is suitable to carbon dioxide alone and is wasteful, expensive and often inadequate with the mixed gases. If the mixed gases are to be administered an apparatus of the type of the H<sub>2</sub> inhalator such as the rescue crews use in carbon monoxide cases is best. With it all the gas is inhaled yet without any rebreathing. With an open or slot mask such as Drs. Robinson and Selesnick use the gas flow during each expiration is wasted. Such a mask is necessary when only pure carbon dioxide is to be mixed with the inspired air otherwise it is unsuitable.

As I happen to have devised and introduced both types of mask I am impartial as between them except that I hold that each should be applied to the purpose to which it is best suited. I agree with Drs. Robinson and Selesnick that the mixture of oxygen and carbon dioxide is probably best for acute cases of alcoholism. But it is my hope that some day not only the acute cases but all inebriated persons taken up by the police will be hyperventilated and dealcoholized either with pure carbon dioxide and an open mask or with a mixture of oxygen and carbon dioxide and an inhalator suitable for its administration.

YANDELL HENDERSON, PH.D., New Haven, Conn.

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

### APICAL ABSCESSSES OF TEETH

To the Editor—A physician friend aged 51 on routine radiographic check up was found to have several apical dental abscesses. Being entirely asymptomatic, he questions the advisability of extraction. What in your opinion is the procedure of choice? Please omit name.

M D, New York.

ANSWER.—First, a radiolucent area around the apex of the root of a tooth cannot in itself be considered proof of apical abscess. There are a number of conditions that cannot be distinguished by the x-rays alone from apical abscess. In making a diagnosis there should be at least, in addition to the roentgenogram, direct observation and clinical history. A positive diagnosis of apical abscess having been made, extraction is not necessarily the treatment indicated. Extraction is undoubtedly the quickest and probably the easiest way of eradicating the infection, but the damage to the individual by the loss of a tooth must be seriously considered, especially if all the teeth in the denture are present. The factors determining the choice between extraction and treatment may be stated as follows: First, the general condition of the patient and especially, the presence or absence of any general systemic condition that might be related to a focus of infection. Second, the position of the tooth and the character of the root canals involved, the clinical and laboratory history in thousands of such cases have shown that such conditions can be cured and the patients remain permanently well in more than 70 per cent of the cases. Infection about the apex of the root of the tooth, although entirely asymptomatic, should be eradicated either by extraction or by treatment. In the absence of definite systemic conditions in a person of good health and in a position in which access for treatment can be obtained, the treatment and preservation of the tooth is the procedure of choice.

### DIPHENYL AND DIPHENYLOXIDE IN INDUSTRY

To the Editor—Will you kindly let me know where I can get information about toxic effects of diphenyl and diphenyl oxide in industry?

V C ROWLAND M D Cleveland

ANSWER.—Diphenyl (biphenyl, phenyl benzene,  $\text{C}_{12}\text{H}_{10}$ ,  $\text{C}_6\text{H}_5\text{C}_6\text{H}_5$ ) exists as colorless waxy crystals having a melting point of about 70 C. and a boiling point near 255 C. It has a distinctive geranium-like odor and is used chiefly as a high temperature, low pressure heat transfer medium and also as a starting point for many derivatives such as chlorinated diphenyl, sulfonic acid nitro, amino and hydroxy compounds. Diphenyl oxide (diphenylether,  $\text{C}_6\text{H}_5\text{O-C}_6\text{H}_5$ ) exists as colorless monoclinic crystals or as an oily liquid. It has a melting point of about 27 C. and a boiling point of about 259 C. It is used as a low pressure heat transfer medium, in manufacturing intermediates, organic chemical synthesis, dyes, drugs and as a perfume in cosmetics and toilet soaps. These substances, for purposes of toxicity, may be considered as one. Apparently, the chief available publications originate with those interested in commercial aspects. In an article by Heindel (*Am Inst Chem Engn Tr* 30 378 1933-1934) the following information is given. Saturated steam has a practical economical upper temperature limit in the neighborhood of 450 F and a pressure of 400 pounds per square inch. Some of the special heating materials for higher ranges provided during the past few years are anthracene, phenanthrene, naphthalene, diphenyl and diphenyl oxide. Mixtures of diphenyl oxide and diphenyl composed of as much as 37 per cent of the latter are characterized by a melting point lower than either diphenyl oxide or diphenyl alone. The minimum freezing point mixture is obtained with 73.5 per cent of diphenyl oxide and 26.5 per cent of diphenyl. The author remarks that every engineer is aware of the difficulty of attaining a completely closed boiler system and that in view of this fact he is frequently asked what the toxic effects of these mixtures will be on workmen. He states that in all the time during which diphenyl oxide has been produced there has been no evidence of any injurious effect from inhaling its vapors. In liquid or crystalline form it is entirely without the irritant or corrosive action of phenol and has no injurious effect whatever on the skin. If they should accidentally get into the mouth or eye these mixtures of diphenyl and diphenyl oxide or of diphenyl oxide and naphthalene produce a slight burning sensation for a short time somewhat similar to the action of kerosene but cause no direful injury. In one

case in which a pipe line burst, allowing the hot vapors to pass directly into a man's face, no more damage was caused than slight burning from the temperature of the vapors. Alice Hamilton in "Industrial Toxicology" (New York, Harper & Brothers, 1934) states that diphenyl is chemically like benzene, from which it is made, but implies that because of its high boiling point it may not be expected to bring about injury in the industry when used as a solid. As one of the chief uses of both diphenyl and diphenyl oxide requires the presence of their vapors, it becomes possible to doubt that these substances may be accepted, at the present time as truly nontoxic. Moreover, it is true that in the manufacture of diphenyl and of diphenyl oxide hazards from other substances such as benzene may arise. Diphenyl can be obtained by passing benzene vapors through a tube maintained at red heat or by employing the 'fettig reaction' of sodium with bromobenzene. Diphenyl oxide can be obtained by passing phenol vapors over thorium oxide.

### SULFUR AND ANEMIA

To the Editor—Would you be kind enough to tell me whether the constant, daily exposure to the fumes of crude sulfur over a period of years has been known to produce or to aggravate a preexisting condition of anemia.

CHARLES F BUCKLEY M D Edgewater, N J

ANSWER.—The effect of constant, daily exposure to fumes of crude sulfur is essentially a chronic irritation with sulfur dioxide. Under such circumstances the direct effects are limited to surface tissues notably the upper respiratory tract. When sulfur is burned, sulfur dioxide is given off and in moist air it quickly changes to  $\text{H}_2\text{SO}_3$  (sulfurous acid) which readily dissolves in water, making sulfuric acid ( $\text{H}_2\text{SO}_4$ ). Such a chemical change may take place when the sulfur dioxide fumes come in contact with moist mucous membranes of the mouth, nose and throat. In sufficient concentration, the caustic effects of sulfuric acid are noted. Individuals accustomed to sulfur dioxide fumes may tolerate from 0.03 to 0.04 part to 1,000 parts of air without exhibiting symptoms. So far as is known, there is no direct effect in the production or aggravation of anemia. The neutralization product formed after the caustic action of sulfuric acid are sulfates. These are nontoxic. Indirectly, however, chronic exposure to sulfur fumes, in sufficient concentration, may be associated with anemia, but focal inflammatory symptoms of the upper respiratory tract should be present (chronic laryngitis or bronchitis). Chronic gastritis has also been reported as a sequel to chronic exposure to sulfur fumes. While this indirect mode of action has not been extensively investigated it might be desirable in this case. The exact type of anemia should be determined, as it may aid in determining the pathogenesis. The question of arsenic volatilization should be borne in mind as a possibility, as crude sulfur compounds often contain it as an impurity.

### AUTOHEMOTHERAPY IN HERPES

To the Editor—Herpes is being treated in the various clinics of this region by reinjecting deep in the muscles some of the patient's own blood. On what theory does this treatment rest? One can assume that, since the germ of herpes is a filter passer or virus it must be present in the blood and therefore a blood clot may while being absorbed have the action of an antigen or vaccine in the production of immunity. Experience seems to prove that the method has merit. Rapid clotting makes blood injection through a syringe a difficult piece of technique. I have successfully substituted the method of vein puncture with clot formation about the site of puncture. Does this method possess any added danger? It is less painful to the patient and less difficult for the doctor. I have developed an instrument for making the puncture. It is a hypodermic needle that has its tip given a long slant to allow the escape of blood from the vein. The end of the needle looks like a groove for a quarter of an inch or more.

B H HAINES M D Blue Earth, Minn

ANSWER.—Herpes zoster is a disease of the sensory root ganglions, cranial or spinal. It is usually on an infectious basis and may occur in epidemics, there are, however, cases in which herpes follows an operation on the gasserian ganglion. Treatment with radiation, by alcohol injection of the spinal ganglion or by intravenous injection of sodium iodide is usually successful but in the aged patient a state of postherpetic neuralgia may persist and drive the individual to suicide.

If the correspondent means herpes simplex, the cold sore, this is truly related to the virus of chickenpox, a fact discovered many years ago by Professor Bokay, the dean of Hungarian pediatricians. Parenteral protein injections supposedly hasten the healing of the sore, and autohemotherapy is one of the mild and simple forms of such therapy. The idea of the correspondent to produce a perivascular clot as a substitute for reinjection, is interesting. However, there are two objections to this method. In the first place, the amount of extravasated blood must be small and will not approximate the customary 5 to

10 cc. that is used in reinjection of the patient's own blood. In the second place, such a procedure favors venous thrombosis, which may be very painful and prohibits the further use of the vein. The reinjection of the patient's blood is not difficult, especially if the syringe and needle are lubricated with sterile oil or petrolatum

#### TONSILLECTOMY IN HEMOPHILIAC

*To the Editor*—A man from 42-45 years of age who is a pronounced hemophiliac, has exceedingly had spongy tonsils, which at frequent intervals get inflamed and cause attacks of tonsillitis. The last time the attack terminated in a very bad and severe peritonsillar abscess. The few throat men who have been called in agree that the tonsils must be removed but they are reluctant in doing it. Will you kindly inform me as to the proper procedure in this case? M D Connecticut.

**ANSWER.**—Careful study of the bleeding time and coagulation time of the patient should be made, as well as attempts to increase the clotting power of the blood by the use of animal or human serum. If the bleeding and clotting time can be materially shortened, careful tonsillectomy could probably be done without any serious results. However, if the bleeding and clotting time cannot be materially reduced, cautious electrical coagulation of small areas of the tonsil might be tried, allowing sufficient time between each treatment for healing. If no primary or secondary hemorrhage occurs after the first attempt, it may be possible to remove all the tonsil tissue even though a great many sittings may be necessary.

#### CATARACT AND ELECTRIC FLASH

*To the Editor*—I have a patient with a cataract in one eye who states that it is due to a so-called flash from electric weld. He received this about a month ago. In my opinion this alone would not be a competent factor in producing the condition. I am wondering whether such an accident has been conceded by any authority to be a cause of cataract. CARL G. SCHWAN MD Hornell N Y

**ANSWER.**—Cataract due to electrical discharge, in the form either of lightning or of a short-circuit flash, is a well known clinical entity. The former was first recognized in 1722 by St. Yves and the latter in 1905 by Desbrières and Bargy. The length of time that elapses between the flash and the development of complete lens opacity is a variable factor. Authentic cases in which this time has been as little as three weeks have been recorded, but in the majority of cases from twelve to twenty months has elapsed. The cause seems to lie in damage to the anterior capsule, where numerous vacuoles develop within twenty-four hours after the exposure. Then a diffused feathery opacity of the anterior subcapsular cortex occurs, which is followed within a short time by a posterior subcapsular saucer-shaped opacity. Cloudiness of the remainder of the lens usually progresses slowly. This whole matter is discussed at length by A. Jess, under the title of *Cataracta Electrica*, in the *Kurzes Handbuch der Ophthalmologie* 5 299.

#### CANKER SORES AND CHOLECYSTITIS

*To the Editor*—A woman aged 37 married with one child, complains of canker sores in her mouth. They come on with no other evidence of indigestion. She reports having had sugar found in the urine when 5 years old and several attacks of gallbladder colic, the last one over a year ago. Otherwise she is healthy. The pulse is 80. The blood pressure is 114 systolic, 80 diastolic. Hemoglobin is 80 per cent. Urinalysis gives negative results. Physical examination gives normal results. The abdomen shows no tenderness or masses. She sleeps well and has a good appetite. The five bad sores she had two weeks ago were nearly cleared when three large ones appeared yesterday. I have used silver nitrate locally and sodium perborate for a repeated month wash. I prescribed vitamin A, B and D capsules rest and a soft diet. I realize that the condition is not serious but it is very annoying and I should like to find the cause. Shouldn't the gallbladder be investigated? GERALDINE HAMILTON CROCKER MD Granville, Ohio

**ANSWER.**—Canker sores in the mouth coming and going are most frequently found to be due to some form of allergic disturbance. They may be herpetic in origin. In the case of the former it is advisable to inquire into a family history of allergy and for other evidences, as frequent afebrile rhinitis, urticaria and intestinal disturbances, such as diarrhea or cramps, following certain foods. A food diary might be kept for a while. If it is herpetic, a simple mouth wash with sodium perborate will be of value.

The question of the gallbladder is interesting because the colic may be calculous in origin, which fact may be discovered by x-ray studies. It may also be an allergic manifestation and require a complete study with protein sensitization tests.

#### GALVANISM IN URETHRAL STRICTURE

*To the Editor*—I have as a patient a young man with a stricture of the posterior urethra, as a sequel to gonorrhea. I should like to apply negative galvanism to this condition. My only source of information on this subject is Kovacs' recent book, which I have. The use of olive-tipped metal bougies is recommended. However it seems to me that it would be risky to use olive tips in the posterior urethra because both of the danger of a false passage and of the danger that the olive tip might slip into the bladder so that withdrawal might cause pain and trauma. Can negative galvanism be applied through the regular steel sounds? If so can you tell me what the proper technic is such as the proper strength current? Are there any hazards in particular to be avoided? Is the effect of the current exerted only at the end of the sound or along its entire length?

AARON LEVY MD Winsted Conn

**ANSWER.**—It is generally recognized by all urologists that galvanism in the treatment of urethral stricture has little if any therapeutic value. The use of the ordinary metal sound such as, for example, the Van Buren sound, should suffice in this case. The sounds should be passed about twice a week. The size of the first sound to be used will depend on the size of the stricture (this is not stated). The sound should be passed slowly to avoid trauma and so as not to produce pain. The size of the sounds can be increased one number at each sitting. If the external urethral orifice is small, a meatotomy is in order. The interval between treatments should be lengthened as rapidly as possible until the necessary degree of dilatation has been attained. The patient should then return in about six months for a check-up. If there has been no contraction of the stricture, he should again be checked in one year. Operation is rarely indicated.

#### TREATMENT OF LYMPHOSARCOMA

*To the Editor*—A woman aged 60 has had a lymphosarcoma for at least fifteen months. A gland under the right sternoclavicular muscle was the first to become enlarged; the other ones later became enlarged including the axillary, inguinal and abdominal glands. The abdominal gland enlarged to the size of a small grapefruit. All the glands seem to melt and disappear under roentgen treatment, but the first gland in the right side of the neck has persisted and recently became larger. The general condition of the patient has remained good after the administration of desiccated hog stomach and other preparations for the secondary anemia which was only mild and was present during the first part of her treatment. Now since the first gland seems to have become resistant to radiation I have thought of some other treatment such as the use of 'colloidal' and I should like to have your opinion in regard to its use in this case, as well as any other suggestions as to other or further treatment. MD Kentucky

**ANSWER.**—Regarding the treatment of lymphosarcoma with colloidal, we may refer to the opinion expressed in *THE JOURNAL*, Sept. 26, 1925, page 997. The only drug that may sometimes influence the course is arsenic. Some remission of the disease is reported in the literature through the use of this drug. It is not likely, however, that in the comparatively late stage of this particular case such medication would be of great value. The course of the disease is generally from one to two years after diagnosis has been made and clinical manifestations have been observed. Radiation treatment generally prolongs the life but little, although it is able to control the symptoms. If the gland becomes resistant to roentgen radiation, a trial with radium radiation may be justified, since, according to some reports, it seems that sometimes irradiation with radium does produce an effect, even in cases which have become resistant to radiation after several roentgen treatments.

#### LIQUID PETROLATUM—COD LIVER OIL

*To the Editor*—1 What are the advantages of the use of liquid petrolatum in the treatment of chronic constipation? Are there any harmful or deleterious effects in long continued use taken in tablespoonful doses three or four times daily? 2 What are the harmful effects either constitutional or organic, of overdosages of cod liver oil? MD New York.

**ANSWER.**—1 Liquid petrolatum is probably the least objectionable of all laxatives in cases in which it is indicated. Even when taken in tablespoonful doses three or four times daily it may produce no harmful effect in patients with spastic colon, ulcerative colitis or diverticulosis. No one, of course, should use it who does not need it, as its prolonged use may lead to a sluggishness of the bowel from lack of exercise in propelling well formed fecal matter.

2 Overdosage of cod liver oil would cause loss of appetite, nausea and even vomiting, diarrhea and possibly also the symptom complex of "biliousness" or of intestinal indigestion.

### HYPERTROPHY OF BREAST

*To the Editor*—A woman aged 34 single, is being treated for an old infection of the pelvis which at present appears to be cured by treatment with the Elliott diathermy method. The menses are regular. Six weeks ago both breasts enlarged like puffing. There is no inflammation, pain or tumor. No cysts can be palpated. It is simply hypertrophy, which disappears shortly remaining for a few minutes. Before the patient arises in the morning both breasts are absolutely normal but shortly afterward the swelling sets in. I cannot find any pathologic condition to account for it. Could it be a simple physiologic condition? If so what is the treatment?  
M D Rhode Island.

**ANSWER.**—The enlargement of the breasts in this case is undoubtedly due to some derangement in one or more glands of internal secretion. Just which one is responsible is difficult to say. It has been shown that hypertrophy of the breast is due to stimulation by the ovarian hormones, but lactation is under the control of the pituitary gland. Since the etiology in this case is unknown and especially since there is no pain or serious disturbance associated with the periodic swellings, it is best to abstain from administering any endocrine or medicinal therapy. Undoubtedly in time the disturbance will correct itself.

### URINARY INCONTINENCE AND MENINGOCELE

*To the Editor*—In 1927 I examined a boy aged 7 years who had double clubbed feet, curvature of the spine, urinary and fecal incontinence and a 4 inch firm nonsensitive oval abdominal tumor back of the bladder. I removed an abdominal meningocele which protruded between the sacrum and the fifth lumbar vertebrae. This contained about 10 ounces of clear fluid. Recovery was uneventful and there has been no recurrence. At the present time the boy's health is very good. He can walk and run, in fact he plays football although he uses his crutches part of the time. He still has urinary and fecal incontinence. His family is desirous of having some surgical operation to improve this condition. What would you suggest?  
M D Oklahoma.

**ANSWER.**—The lack of bladder and rectal sphincter control that the patient has is due to involvement of the spinal cord, which is associated with the congenital development of a meningocele. There is no way of replacing this function.

### INHERITANCE OF MALFORMATIONS

*To the Editor*—A man has congenital malformation with the right lower limb normal to the knee joint. The knee joint is normal and only 2 inches of the tibia is present. The remainder of the limb is absent. The left limb is practically normal with the exception of slight ankylosis of the knee joint. The family history is absolutely negative as to any congenital or other malformation. The patient is otherwise robust, strong and healthy. He wishes to marry and is anxious to have children. Need he fear the transmission of these malformations to his children?  
M D Wisconsin.

**ANSWER.**—If the limb deformity is a mutation it is likely to be inherited as a dominant, for nearly all limb abnormalities, such as polydactyly, brachydactyly, split hand or lack of limbs, are dominant.

### PAIN IN COCCYX

*To the Editor*—A girl, aged 14 years, has a coccyx which is very firm straight and somewhat prominent. In sitting on hard chairs pain is produced from the pressure. Would forceful fracture of the coccyx from the sacrum be indicated or excision of the coccyx?  
M D Ohio.

**ANSWER.**—The data are inadequate. There is no statement as to whether this is a congenital or a traumatic lesion.

Manipulation of the coccyx is a recognized procedure and is beneficial in certain cases of arthritis adhesions and displacement. There is no one but the patient who can decide whether the complaint is sufficient to warrant excision of the coccyx. Forceful fracture of the coccyx would be contraindicated.

### EPINEPHRINE AND OPIUM IN ASTHMA

*To the Editor*—Will you kindly advise if there is any definite contra indication to prescribing epinephrine and any form of opium in an attack of asthma?  
EDGAR V. HENRY M D Beaumont Texas.

**ANSWER.**—Epinephrine is contraindicated, or at least should be employed with great caution, in subjects of advanced arteriosclerosis, or in those with greatly elevated blood pressure, whether this is persistent or occurs only during the attack. It is also contraindicated in cases benefited by administration of nitrite. In any case, its injection should be considered an emergency measure, to be used in the smallest effective dose and not to be repeated oftener than is absolutely necessary. Frequently repeated injections may lead to cardiac exhaustion and

possible pulmonary edema. Opium is taboo for self administration on account of danger of habit formation, and it should be given only by the physician himself in cases that do not respond to epinephrine therapy.

### MOTTLED ENAMEL OF TEETH

*To the Editor*—My daughter aged 7 years has two yellow spots on her lower central incisors and the upper central incisors are coming in the same way. Our family dentist cannot explain this. Her nails are brittle and scaling. She gets cod liver oil and a good diet with plenty of orange juice. She appears to be in excellent health. Can you advise me?  
ELMER W. CLARK M D, Norton Mass.

**ANSWER.**—The condition mentioned is known as mottled enamel. It was undoubtedly caused by some metabolic disturbance during the second or third year while the crowns were being formed and calcified.

The spots are said to be areas in which the cementing substance between the enamel rods is faulty. They may remain as such during life, or they may develop into true caries at any time.

A good discussion of the subject, by H. Trendley Dean, can be found in the February 1933 and August 1934 issues of the *Journal of the American Dental Association*.

### PIGEON TOES OR METATARSUS VARUS

*To the Editor*—What is the medical term for the condition commonly known as pigeon toes? Is any form of treatment indicated? If so when should such treatment be instituted?  
M D New York.

**ANSWER.**—The medical term for pigeon toes is metatarsus varus.

In spite of the fact that some of the older orthopedic surgeons steer clear of treating this condition, treatment is indicated. Mechanical treatment includes proper shoes, which may be straight-last shoes with modification under the outer borders of the sole and heel, or the so-called pigeon toe or club foot shoes, which are on the market.

Splints or plaster-of-paris casts are sometimes necessary. Roller skating is helpful exercise as is the 'Charlie Chaplin' walk. Also special exercises such as walking on a surface that has the outlines of the abducted feet stenciled on it.

### BLONDES AND EUGENICS

*To the Editor*—The family of one of an infatuated couple both of whom happen to be natural blondes has asked my help in separating and preventing the couple marrying. Their contention is that this wedlock would produce unhealthy children because both are blondes. As I did not agree with this contention I told them I would investigate and give them an opinion from authoritative sources. I would appreciate your opinion on this eugenic question.  
M D Connecticut.

**ANSWER.**—So far as is known, there is no relation between blondness and health. In Scandinavian countries, mating between blondes is very common and without any ill effects on offspring.

### TABES AND FRACTURES

*To the Editor*—There is reference in the literature to the fact that one of the causes of traumatic fractures especially of the legs is tabes. I am unable to find any explanation of the mechanism by which tabes produces such fractures.  
M D, Indiana.

**ANSWER.**—In some cases of tabes a form of neuropathic bone atrophy occurs. This usually takes the form of Charcot's arthropathy, affecting chiefly the knee, ankle and vertebrae, but in rare instances it involves the shaft of the long bones such as the femur and tibia, and next in frequency the neck of the femur. In such cases, fractures may occur with so little injury as to be practically spontaneous.

The condition is not to be confused with osteomalacia, fragilitas ossium or the demineralization due to parathyroid dysfunction.

### GELLBORN AND MENGE PESSARIES

*To the Editor*—I have seen a cut of the Gellhorn pessary. Do you recommend it for inoperable cases of prolapse of the uterus?  
G. A. EASTON, M D, Grand Rapids, Mich.

**ANSWER.**—The Gellhorn pessary is a modification of the Menge pessary, an instrument of great value in selected cases of uterine descent and procidentia. The Gellhorn instrument has been used for only a short time but is apparently a satisfactory substitute for the Menge pessary, and it is less expensive.

## Medical Examinations and Licensure

### COMING EXAMINATIONS

**AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY** Written examination for Group B applicants will be held in various cities throughout the country March 14. Oral examination for Group A and B applicants will be held in Kansas City Mo May 11-12. Applications for written examination should be filed with the secretary before Jan 15. Sec Dr C Goy Laue 416 Marlboro St Boston.

**AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY** Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada, March 28. Applications must be filed not later than February 28. Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11-12. Applications must be received not later than April 1. Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6).

**AMERICAN BOARD OF OPHTHALMOLOGY** Kansas City Mo May 11 and New York Oct. All applications and case reports must be filed sixty days before date of examination. Asst Sec Dr Thomas D Allen 122 S Michigan Ave Chicago.

**AMERICAN BOARD OF ORTHOPAEDIC SURGERY** St Louis Jan 11. Sec Dr Fremont A Chandler 180 N Michigan Ave Chicago.

**AMERICAN BOARD OF OTOLARYNGOLOGY** Kansas City, Mo May 9. Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha.

**AMERICAN BOARD OF PEDIATRICS** Kansas City Mo May 9. Sec Dr C A Aldrich 723 Elm St Winnetka Ill.

**AMERICAN BOARD OF RADIOLOGY** Kansas City Mo May 8-10. Sec Dr B R Kirklin Mayo Clinic Rochester Minn.

**CALIFORNIA Reciprocity** San Francisco Jan 15. Sec Dr Charles B Pinkham 420 State Office Bldg Sacramento.

**COLORADO** Denver Jan 7. Sec Dr Harvey W Snyder 422 State Office Bldg Denver.

**CONNECTICUT Basic Science** New Haven Feb 8. Prerequisite to license examination. Address State Board of Healing Arts 1895 Yale Station New Haven.

**DISTRICT OF COLUMBIA** Washington Jan 13-14. Sec. Commission on Licensure Dr George C Ruhland 203 District Bldg Washington.

**HAWAII** Honolulu Jan. 13-16. Sec Dr James A Morgan, 48 Young Bldg Honolulu.

**ILLINOIS** Chicago Jan 28-30. Superintendent of Registration, Department of Registration and Education Mr Homer J Byrd Springfield.

**IOWA Basic Science** Des Moines Jan 14. Sec. Dr Edward A Benbrook Iowa State College Ames.

**MINNESOTA Basic Science** Minneapolis Jan 7-8. Sec Dr J C McKinley 126 Millard Hall University of Minnesota Minneapolis. Medical Minneapolis Jan 21-23. Sec Dr Julia F Du Bois 350 St Peter St. St. Paul.

**NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II** Feb 12-14, May 6-8, June 22-24 and Sept 14-16. Part III tentatively scheduled as follows: Chicago Jan 7-9 and New York Jan 13-15. Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia.

**NEBRASKA Basic Science** Omaha Jan 14-15. Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln.

**NEVADA Reciprocity** Carson City Feb 3. Sec Dr Edward E Hamer Carson City.

**NEW YORK** Albany Buffalo New York and Syracuse Jan 27-30. Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany.

**NORTH DAKOTA** Grand Forks Jan 7-10. Sec Dr G M Williamson 4 1/2 S 3d St Grand Forks.

**OREGON** Portland Jan 7-9. Sec Dr Joseph F Wood 509 Selling Bldg Portland.

**SOUTH DAKOTA** Pierre Jan 21-22. Dir Division of Medical Licensure Dr Park B Jenkins Pierre.

**VERMONT** Burlington Feb 12. Sec Board of Medical Registration Dr W Scott Noy Underhill.

**WASHINGTON Basic Science** Seattle Jan 9-10. Medical Seattle, Jan 13-15. Dir Department of Licenses Mr Harry C Huse Olympia.

**WISCONSIN** Madison Jan 14-16. Sec Dr Robert E Flynn 410 Main St La Crosse.

### Tennessee October Examination

Dr H W Qualls, secretary, Tennessee State Board of Medical Examiners, reports the written examination held in Memphis, Oct 1-2, 1935. The examination covered 8 subjects and included 80 questions. An average of 75 per cent was required to pass. Twenty candidates were examined all of whom passed. The following schools were represented:

| School  | PASSED | Year Grad. | Per Cent |
|---|--------|------------|----------|
| College of Medical Evangelists  |        | (1935)     | 82.3     |
| Tolane University of Louisiana School of Medicine                       |        | (1935)     | 88       |
| Harvard University Medical School                                       |        | (1934)     | 84.3     |
| University of Tennessee College of Medicine                             |        | (1935)     | 78.1     |
| 80.9 81.3 81.9 82.3 82.5 82.5 82.9 83 83.3, 83.4 83.4 83.6 85 85.6 85.8 |        |            |          |

Eight physicians were licensed by reciprocity from September 4 through November 12. The following schools were represented:

| School  | LICENSED BY RECIPROCITY | Year Grad.     | Reciprocity with |
|---|-------------------------|----------------|------------------|
| Emory University School of Medicine           |                         | (1917)         | Georgia          |
| University of Georgia School of Medicine      |                         | (1933)         | Georgia          |
| University of Illinois College of Medicine    |                         | (1931)         | Mississippi      |
| University of Louisville Medical Department   |                         | (1911)         | Kentucky         |
| Vanderbilt University School of Medicine      |                         | (1933)         | Mississippi      |
| Medical College of Virginia                   | (1932)                  | North Carolina | Virginia         |
| University of Virginia Department of Medicine | (1931)                  | Virginia       |                  |

### Oklahoma Reciprocity and Endorsement Report

Dr James D Osborn Jr, secretary, Oklahoma State Board of Medical Examiners, reports 11 physicians licensed by reciprocity and 1 physician licensed by endorsement at the meeting held in Oklahoma City, Oct. 21, 1935. The following schools were represented:

| School                                     | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|--|-------------------------|------------|------------------|
| Rush Medical College                       |                         | (1933)     | Illinois         |
| University of Kansas School of Medicine    |                         | (1932)     | Kansas           |
| University of Minnesota Medical School     |                         | (1923)     | Minnesota        |
| University of Nebraska College of Medicine |                         | (1932)     | Nebraska         |
| McBarr Medical College                     |                         | (1925)     | Tennessee        |
| Univ of Tennessee College of Med           | (1929) (1933)           | (1934)     | Tennessee        |
| Baylor University College of Medicine      |                         | (1933)     | Texas            |
| University of Texas School of Medicine     | (1931),                 | (1933)     | Texas            |
| School                                     | LICENSED BY ENDORSEMENT | Year Grad. | Endorsement of   |
| College of Medical Evangelists             |                         | (1934)     | N B M Ex.        |

## Book Notices

**Clinical Parasitology and Tropical Medicine** By Dámaso de Rivas B Sc Biol M Sc MD Professor of Parasitology to the Graduate School of Medicine and Assistant Professor to the Department of Pathology University of Pennsylvania. In collaboration with Carlos T de Rivas BA MD Pathologist to the Santo Tomas Hospital Panama. Cloth Price \$5 Pp 367 with 145 illustrations Philadelphia Lea & Febiger 1935.

This is an elementary textbook for the use of students and practitioners dealing with protozoan and helminthic parasites and the diseases associated with these infections. The author expresses the view that these maladies are no longer limited to tropical countries, since modern transportation has disseminated them, 'with few exceptions, to practically all latitudes inhabited by man.' It is doubtless true that acceleration of the speed of transportation, increases in numbers of travelers, and the greater movement of men in and out of the tropics all combine to mingle infections from a greater variety of sources. But the truly tropical diseases, such as trypanosomiasis, yellow fever and Guatemalan onchocerciasis, are still limited to the tropics and near tropics by their dependence on insect vectors with a tropical distribution. Absence of sanitation and climatic and dietary factors also combine to make certain diseases more disastrous in the tropics than in temperate regions. Van't Hoff's law of the effect of rise of temperature on the velocity of chemical reactions seems to have speeded up the rate of organic evolution in the tropics. The tropical flora and fauna are much richer in species and their diversification in structural organization is much greater than that in the temperate and polar environments. Man undoubtedly inherited most of his parasites, or their ancestors, from his own primate forebears and has evolved with them. An increased industrial interest in the tropics has brought to light a number of restricted parasitic infections, but these will perforce need to find new insect vectors if they are to become established in temperate climates. Transportation of infected human beings alone will not permanently disseminate these diseases. Physicians will find a useful account of the authors' intra-intestinal thermal method of treatment of intestinal protozoan and helminthic infections and of transduodenal medication. The author specifically states that he has used the textbook style rather than the monographic one. This is evident throughout the work but it hardly excuses the failure to note the danger of cardiac complications with the use of emetine for amebiasis, and the omission of all reference to carbarsone and viofilm. The illustrations are either antiquated or mediocre, and the therapeutic and prophylactic aspects are given the scantiest attention.

**A Bibliography of the Poem Syphilis Sive Morbus Gallicus, by Girolamo Fracastoro of Verona.** By Leona Baumgartner and John F Fulton. Cloth Price \$5 Pp 157 with 10 illustrations. New Haven Yale University Press London Oxford University Press 1935.

In this work Baumgartner and Fulton show how delightful bibliography may be. In illustration of its interest they say in the preface. Every edition of a book and particularly every translation has human interest. One wishes to know something of the printer, the editor, or translator, as well as the public for which the edition was intended. It is legitimate also to



enquire why a given printer saw fit to publish a particular edition, and why, as in the work before us, five separate translations into Italian suddenly appeared within a few years of one another (1731-1739) some two centuries after the poem was originally issued. What led to the sudden revival of interest in Fracastoro at this particular period in the history of Italian letters? The circumstances leading to the appearance of four English translations between 1928 and 1935 present a contemporary problem of equal interest." And in tracing these various interests one gets a many sided and clear picture of the subject of the study and of the reasons for his fame. "One hundred editions of Fracastoro's poem *Syphilis Sive Morbus Gallicus* have been traced, including translations into six languages, fifteen independent versions in Italian and seven in English. The full extent of the influence exerted by a work which has received such wide recognition cannot be adequately estimated without searching bibliographical analysis."

The main body of the work is, of course a catalogue of the editions of Fracastoro: first the Latin editions, second the Italian translations, third the English translations, fourth the French translations, fifth the German translations, sixth the other translations, and finally a section listing the biographies and other works on Fracastoro, a total of 206 items. To one who has never done any bibliographic study, a study of these editions and the notes on the various editions would be a revelation of the delight of such a pursuit. In addition to the notes on the various editions there are introductory comments on the various chapters and an introduction to the whole work by Arnold Klebs, which serve to orient one in the particular field that is being considered. The work is a scholarly and useful addition to the good literature of medicine.

**Hospital Organization and Management.** By Malcolm T. MacEachern M.D. C.M. D.Sc. Associate Director American College of Surgeons. Cloth. Price \$7.50. Pp. 944 with 22 illustrations. Chicago: Physicians Record Company 1935.

The value of any publication touching the arts and sciences bears a direct relation to the qualifications and experience of the author in the particular field covered. Certainly one may approach the volume under consideration with the assurance that no other individual of this era is better qualified by training and experience to write on hospital organization and management. The material is divided into eighteen chapters and deals with the history of hospitals, the hospital of the twentieth century, promoting and building the new hospital, organization of the hospital, administering department medical staff, admitting, medical, nursing dietary, outpatient medical social service, medical records, business and service departments, ethics, public education, and standing orders. Many of the chapters are accompanied by an extensive bibliography, and thirteen of the eighteen chapters contain addenda in which are presented lists of such items as furniture and nontechnical equipment, by-laws of auxiliary, staff and student organizations, laboratory equipment, various forms and reports, culinary and dining room equipment, accounts, fee schedules, suggested topics for talks and material for lantern slides. There is not a phase of hospital organization and management that has not received the author's thoughtful attention. The material is presented in a masterly and systematic manner and easily captivates the attention of the specialist teacher, student and layman. To the specialist in hospital administration the volume will serve as a complete reference book and as a starting point and guide for future more profound studies of any phase of the subject under consideration. To the teacher and student the book may well serve as an all-around and sufficient thoughtfully compiled textbook on the subject of hospital organization and management. To the layman directly or indirectly interested in the subject of hospital management and hospitalization the book not only presents the much needed authentic information but offers fascinating reading. For this reason the book should be looked on and used as an ambassador of good will between the hospital and those directly responsible for its proper functioning on the one hand and the public (whether contributing to its maintenance or receiving its benefits) on the other. While the book is written in a manner that will be understandable to all who are in one way or another associated with hospital work anywhere on the globe the

specifically American point of view generally predominates. This makes the book free from controversy, yet renders it more practical and thereby more valuable. No hospital library will be complete without a copy of this book on its shelves, and it would be highly desirable if it could be listed for optional reading matter in all medical schools. There are twenty-two original drawings by Howard Cox, each typifying the spirit of the chapter it accompanies, and an ample index of forty-four pages.

**Beitrag zur Kenntnis des Ileum terminale fixatum und Ileus ilei terminalis fixati.** Eine anatomische klinische und klinisch statistische Studie. Von Lennart Peterson. Acta chirurgica Scandinavica Vol. LXXV Supp. 32. Paper. Pp. 541. 63. 112 with 21 illustrations. Helsingfors: Mercators Tryckeri Aktiebolag 1934.

This monograph on fixation of the terminal ileum and ileus associated with fixation of the terminal ileum is based on an exhaustive study of the literature, personal studies of anatomic material, and a study of clinical records of surgical cases. The first 199 pages are devoted to fixation of the terminal ileum. The author's own anatomic studies are based on necropsies of forty-seven old fetuses and new-born children and fifty-eight adults. The last hundred pages of this section comprise a presentation of his personal studies of clinical cases.

The second half of the volume deals with ileus associated with fixation of the terminal ileum. This section begins with a review of the literature, including a critical analysis of the statistics, and then presents, in detail, studies of postmortem material and the clinical observations in 217 cases. The volume ends with 322 protocols. The first forty-seven are of new-born postmortem material (sixteen cases of ileum terminale fixatum and thirty-one cases of ileum terminale liberum). Then follow fifty-eight protocols of postmortem cases in adults (twenty-nine cases of ileum terminale fixatum and twenty-nine cases of ileum terminale liberum). The remaining protocols are excerpts from 217 records of patients operated on for ileus ilei fixati. The bibliography covers sixty-three pages.

The author believes that the material studied indicates that most cases of ileum fixatum are the results of a congenital anomaly or variant of development. The most caudally situated part of the mesentery of the ileum is missing or a portion of its length lies lower than normal and hampers the mobility of the terminal ileum. His statistics show that there is a certain increase after birth and that this is most pronounced at the time of transition from young to middle life. Some cases may develop as a result of trauma, thrombosis, chronic mesenteritis or acute inflammatory processes in the ileocecal region. Appendicitis and gynecologic inflammations are of little etiologic importance. The anomaly is associated with chronic intestinal stasis in slightly more than half of the cases. Most cases require no surgical treatment. Operation is indicated only when there are definite evidences of chronic obstruction. A simple plastic operation on the mesentery can be employed only when the obstruction is due to a thin fixed fold and the bowel is movable. Wichmann's plastic operation, if the pleated fixations are wider. More serious fixations call for ileocolostomy or resection and ileocolostomy.

Ileus ilei terminalis occurred in 11 per cent of cases found at laparotomy, and, in the author's statistics, accounted for 97 per cent of ileus cases.

Ileus in these cases occurs, almost without exception, in men (91.9 per cent), and chiefly in men who do heavy work and are in their late middle age. Most of these patients have suffered from indigestion for some time, with constipation. The cases comprise thirty of volvulus, thirty-five of obstruction due to axial torsion, and 148 cases due to other forms of obstruction, of which ninety cases were due to angulation. In 8 per cent the obstruction was incomplete. Operation consists in attempting to free the cause of the obstruction, such as untwisting cases of volvulus or axial torsion, however, when the afferent loops are dilated and relaxed, with feeble peristalsis, enterostomy, appendicostomy or cecostomy must be added. If the patient is very toxic and the bowel wall is dilated and lax, ileostomy alone is indicated.

The author's statistics show that the mortality has been reduced from 59.5 per cent (1915-1930) to 45.2 per cent (1931-1932).



**Wayward Youth** By August Aichhorn With a foreword by Sigmund Freud and a note about the author by the editors [Adapted from the second German edition.] Cloth Price \$2.75 Pp 236 New York Viking Press 1935

Workers in the field of delinquency have been familiar since 1925 with the German edition of this book. At that time it was hailed as a masterpiece which would reform methods of dealing with delinquent children. Whereas formerly the superficial explanation given by a child for his conduct was accepted as expressing the true cause of his bad behavior, attitudes changed markedly with the appearance of Aichhorn's book. No longer were superficial explanations considered valid, but investigations were made into the deeper mental structures of the delinquent child with the result that psychoanalytic material came to light which was not only instructive in revealing causes but was often of material aid in correcting the problem. Many of the ideas expressed in this book have been adopted into the literature of child guidance during the decade since the German edition appeared, and techniques that were then considered unusual are now commonplace. The book is full of examples of cases in which delinquency can be explained on the basis of some deep-seated cause, some libidinous mechanism that has gone astray. The author's methods of case analysis are fairly clearly outlined, although in the English edition one does not get the sense of completeness about the case histories as clearly as one did in the German edition, even though the translation is quite close. Several chapters are devoted to the use of the psychoanalytic transference and the ego ideal as a therapeutic means for handling the unsocial and delinquent child. In another chapter Aichhorn discusses his method of running a training school, novel in 1925 but now widely adopted in this country under the cognomen of the "passive technic." All in all, this is a splendid volume, and an interesting translation, rather lighter than most psychoanalytic treatises to be sure, but nevertheless one that should be of great significance to educators, pediatricians, and psychiatrists. It cannot be too highly recommended as a beginning textbook for workers in delinquency.

**Der chirurgische Operationssaal. Ratgeber für die Vorbereitung chirurgischer Operationen.** Von Franziska Berthold. Neu bearbeitet von Professor Dr. Karl Vogeler, Leiter der chirurgischen Abteilung des städtischen Krankenhauses Stettin. Third edition. Paper Price 4.50 marks Pp 184 with 302 illustrations. Berlin Julius Springer 1935

This book in the introduction stresses the importance of antiseptics, asepsis, sterilization and disinfection. It then deals with the preparation for the various types of operations, giving in detail the variety of instruments to be used in particular operations, with illustrations of numerous instruments, and telling where they can be purchased in Germany. It also gives in detail how the operating room should be set up for every type of operation. It also describes the various types of sterilizers and tells where they can be purchased. In other words, the book is an instrument and operating room equipment catalogue and describes the setup used in the particular hospital of which the authors are members. One can readily see that the book would be of almost no value in this country. In the first place, it is more practical to purchase instruments from our own instrument houses. Sterilizers also must be supplied by our American manufacturers because of the repair and subsequent replacement of new parts. Also it is impossible to adopt the operating room technic of a foreign hospital. Operating room technic is peculiar to every hospital and adapts itself to the surgeons of that staff, and every operating room supervisor has her own book giving the details of the setup for the various types of operations of each surgeon.

**Robert Harvey Reed. A Sanitary Pioneer in Ohio.** By Robert G. Patterson Ph.D. Boards Pp 88 with illustrations. Columbus The Ohio Public Health Association 1935

This biography is of particular interest to physicians in Ohio, but it is not without interest to all physicians because it contains a reminder of the important part played in the early history of the public health movement by practicing physicians. Through the Ohio Sanitary Association Dr. Reed and fellow-pioneers were responsible for the original formation of the Ohio State Board of Health. In this day, when the contributions of the physician to public health are conveniently forgot-

ten or minimized by certain small but vociferous elements among public health and social workers, it is worth while to have recalled to mind the fact that public health movements in their beginnings owed much of their impetus to practicing physicians.

**Beiträge zur Pathogenese und Epidemiologie der Infektionskrankheiten.** Von Prof. Dr. med. H. A. Ginscht-Dir. im Institut Robert Koch in Berlin. Boards Price 5.50 marks Pp 127, with 6 illustrations. Leipzig Georg Thieme 1935

The problems of infection and its prevention are discussed in a general way. Individual infectious diseases are not considered. The nature and the forms of infection, active immunity, resistance and immunity in relation to heredity, variation on the part of infectious agents with reference to pathogenic action, and epidemiology are the main topics. Either the author is not familiar with recent developments in the prevention of scarlet fever or else he discounts completely their significance, because he lists scarlet fever offhand as an example of a non-preventable disease. The book has particular reference to conditions in Germany and its main object is to stimulate the interest of the younger generation of physicians in infectious diseases, especially their transmission.

**The Diagnosis and Treatment of Diseases of the Heart.** By Henry A. Christian M.D. Sc.D. LL.D. Hersey Professor of the Theory and Practice of Physic Harvard University [Reprinting of Oxford Monograph Vol. III The Diagnosis etc.] Cloth. Price \$6 Pp 373 with 25 illustrations. New York Oxford University Press 1935

The appearance of Christian's section in the Oxford Monographs as a separate volume is a sign of its well deserved popularity. The author has brought many of the chapters down to date and has added a section summarizing the physiologic mechanisms responsible for syncope and collapse, which might be mistaken for the Adams-Stokes syndrome. While intended primarily for the internist familiar with heart disease, this book is to be highly recommended to all medical readers for the sound advice it contains. It represents the results of a large experience, judiciously handled by a mature clinician, expressed in simple language. It illustrates the transition from the purely morphologic to the functional view now taking place in the field of diseases of the heart. While the author is not always in agreement with the views held by the majority of authorities in this field, his views are always challenging. The book will give the reader the present views of a leader in medicine on a subject that he has mastered by constant application over many years.

**Des réflexes conditionnels. Études de physiologie normale et pathologique.** Par G. Marinesco professeur à la Faculté de médecine de Bucarest et A. Kreindler assistant à la Faculté de médecine de Bucarest. Préface de M. le Professeur Georges Dumas. Paper Pp 171 with illustrations. Paris Librairie Félix Alcan 1935

This little monograph is a brief and clear but not especially critical summary of the fundamental work on conditioned reflexes in experimental animals, and the development of conditioning in the human infant, with a final essay on the possible role of conditioning in clinical neurosis, dementia praecox, paranoia, epilepsy, stammering and other functional disorders. Pavlov's views and experimental data are generally accepted by the authors, and the book is dedicated to this great pioneer in experimental physiology of the brain.

**The Medicine Man of the American Indian and His Cultural Background.** By William Thomas Corlett M.D. LL.D. C.P., Fellow of the Royal Society of Medicine of Great Britain. Cloth Price \$5 Pp 369 with 24 illustrations. Springfield Illinois and Baltimore Charles C. Thomas 1935

The author of this volume is a distinguished dermatologist who has selected as a hobby the life and culture of the American Indian. While the title of his book is "The Medicine-Man," the book is in no sense of the word a medical book, for it must be understood that the medicine-man of the Indian was much more the priest than he was the physician. Thus it becomes necessary for Dr. Corlett to discuss the origin and culture of the Indian medicine-men and priests of the various North American and South American tribes. Then he devotes one section of his book to child bearing, and another to foods and materia medica of the Indians. The book is beautifully printed and handsomely illustrated, supplemented by a good

bibliography and an index, and all together is a fine volume as a gift to any one whose interest lies in our aboriginal peoples

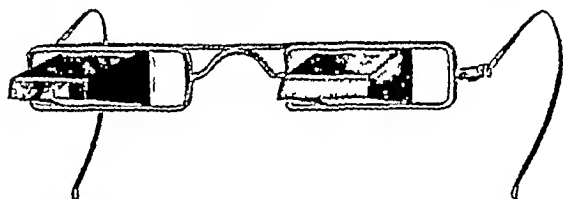
A Classified Bibliography on Psychodietetics By Martin F Fritz Psychological Monographs edited by Joseph Peterson George Peabody College Psychological Review Publications Volume XLVI No 2 Whole No 206 Paper Price 75 cents Pp 53 Princeton N J, & Albany N Y Psychological Review Company 1934

About half of this monograph consists of its bibliographic list of 669 references in English, up to 1933 the other half is a twenty-five page condensed commentary on their content Psychodietetics is defined as "the science of the feeding of an individual in sickness and in health with particular reference to the mental aspect." Classification is into twenty physiologic (as endurance, sex expression) and pathologic (as allergy, beriberi) categories The monograph will prove useful to psychopathologists interested in the field

## Miscellany

### SPECTACLES FOR THOSE FORCED TO BE RECUMBENT

Many physicians have on occasion felt the desirability of supplying persons compelled to be in a completely supine position with some type of spectacle that would enable them to read while lying absolutely flat on the back Reading in this posture without special aid requires holding the book or periodical in a tiring position above the face or else holding the



eyes in a position which is in itself tiring In the *British Medical Journal* for Aug 10, 1935, appears the description of a pair of spectacles made with especially designed prisms which allow the wearer's eyes to be held in a normal position while the book is held in a comfortable position resting on the chest or abdomen. The prisms are designed so that light is reflected



twice and emerges at the third surface free from distortion or color of the image. The frame of the spectacles is made so as to permit addition of the reading correction where it happens to be required, or the spectacles may also be permitted to go over the ordinary lenses worn by the person concerned Because of the cost of these lenses it is understood that arrangements are to be made for renting them for patients in hospitals who require them

## Medicolegal

**Charitable Hospitals Liability for Hot Water Bottle Burn**—After the birth of the appellee in the appellant hospital, he was placed in a basket used to hold newly born infants While in the basket he suffered a severe burn, apparently due to contact with a hot water bottle. According to the evidence, the burn was of a severe nature that resulted in considerable permanent physical impairment. Attributing the burn to the negligence of the hospital employees, the appellee, through his guardian, brought suit and obtained judgment in the trial court The hospital appealed to the Supreme Court of Arizona, contending that, it being a charitable hospital, no liability attached for injuries to patients

The question presented, said the court, was one of first impression in Arizona, no previous case having come before the Supreme Court involving the liability of charitable hospitals After reviewing the cases decided in other jurisdictions the court concluded the better rule to be that unless a charitable hospital fails to use due care in the selection of employees no liability attaches for injuries to patients due to the negligence of employees The fact that a patient pays for the services rendered does not change the rule in regard to liability The test of whether an institution is charitable, the court said, is whether it exists to carry out a purpose recognized in law as charitable, or whether it is maintained for gain, profit, or private advantage In the opinion of the court, the appellant hospital was a charitable institution

The judgment of the trial court, therefore, was reversed and the case remanded for a new trial—*Southern Methodist Hospital and Sanatorium v Wilson (Ariz)*, 46 P (2d) 118

**Optometry Prohibition of Advertisements of Fixed Prices**—The Connecticut state board of examiners in optometry promulgated the following regulation

The advertising by any licensed optometrist, or any licensed optometrist who is also engaged in the dispensing of ophthalmic products etc., of definite fixed prices for service or eye-glasses, spectacles frames lenses and accessories is prohibited as immoral fraudulent dishonorable and unprofessional conduct. Any registered optometrist who through his license makes possible the establishment or conduct of an optical department by any person or persons not licensed to practice optometry shall be held responsible for all advertising published under the sponsorship of his license

Two department stores, an optical company which conducted optical departments in such stores, and two licensed optometrists who were in charge of these departments, instituted proceedings for a declaratory judgment to ascertain their rights under the regulation and for an injunction restraining the board of examiners from enforcing the regulation. The trial court granted the injunction and the defendant board appealed to the Supreme Court of Errors of Connecticut.

The trial court, said the Supreme Court of Errors, based its decision on the erroneous assumption that the optometry practice act requires an optical department in a store to employ a licensed optometrist and that the regulation promulgated by the board forbids all advertising of optical goods at fixed prices by such a department. While the optometry act provides that nothing in it shall prohibit "the operation in a department store of an optical department under the supervision of a duly licensed optometrist," it does not forbid a store from operating such a department without the employment of a licensed optometrist A department store may under the act conduct an optical department where the services of an optometrist are not employed or it may employ a licensed optometrist in connection with such a department. The purport of the regulation is that as an optometrist is forbidden in the conduct of his own business to advertise at fixed prices his services or the sale of glasses spectacles, frames, lenses and accessories, so he must not, when employed in an optical department, permit the advertisement by the department at fixed prices of such services as are within the purview of the statute, or of such goods, when advertised under his sponsorship by reason of his name appearing thereon If the regulation were interpreted to mean that no optical department could publish advertisements of optical goods without the name of the optometrist in charge appearing therein and that thereby his license would be

subject to revocation if such goods were advertised at fixed prices, it would prevent any such department from advertising such goods at fixed prices, if the store desired to place the department in charge of a licensed optometrist. So interpreted, the regulation would constitute an attempt to regulate the sale of optical goods beyond the powers of the board and would create a discrimination of at least doubtful constitutionality.

The optometry act, continued the court, designates specific causes for which the board may revoke a license, and then adds certain general words such as "immoral," "dishonorable" or "unprofessional" as indicating the character of conduct for which a license may be revoked. These words, in themselves, said the court, have no significance in law and might seem to authorize the revocation of a license for acts having no reasonable relation to the underlying purpose of the optometry act, the protection of the public. Giving these words a broad meaning, it would be difficult to justify the grant to the board of power to revoke a license for any conduct which it might deem to be immoral, dishonorable or unprofessional. *Czarra v Board of Medical Supervisors*, 25 App D C. 443. It cannot be assumed, however, that the legislature intended to enact a law of at least doubtful constitutionality. It must be assumed that the legislature used the words in the light of the fundamental purpose of the act. Thus viewed, the words may be construed to include only that conduct within their fair purport which either shows that the person guilty of it is intellectually or morally incompetent to practice optometry, or that he has committed acts of a nature likely to jeopardize the interest of the public. So construed the power thus vested in the board may properly be exercised.

Since, in the opinion of the Supreme Court of Errors, the trial court erroneously construed the provisions of the optometry act and the consequent effect of the regulation promulgated by the board, the judgment granting the injunction was set aside and the case remanded.—*Sage-Allen Co v Wheeler (Conn)*, 179 A 195

**Compensation of Physicians Medical Services Rendered Paupers**—Archambault, a resident of the town of Holland, Vt, while at work for one Musgrove, fell and fractured his sixth and seventh cervical vertebrae. The plaintiff, a physician, was called to treat him. On being informed that the injured man was unable to pay for treatment, the plaintiff endeavored to communicate with the overseer of the poor. That official being out of town, word was left with the overseer's wife for her husband to call the plaintiff. After instructing Musgrove to get in touch with the overseer, the plaintiff removed the injured man to a hospital and rendered the necessary medical care. Musgrove did get in touch with the overseer, informing him concerning the accident, but apparently no arrangement was made relative to payment for the medical services. The town of Holland refused to pay the plaintiff for his services and he brought suit. The trial court rendered judgment for the plaintiff, and the town appealed to the Supreme Court of Vermont.

The Vermont statute relating to poor relief, said the court, devolves a duty on the overseer of the poor to whom application is made to relieve a poor person if in need of assistance. The term "assistance" implies that the needy person may be able to pay some of the expense of his support, neither the language of the statute nor the spirit of modern poor laws require that the applicant shall be utterly worthless so far as property goes to entitle him to help. The fact, therefore, that the injured man had an adjusted service certificate for \$1,551, on which he had borrowed only \$125 and on which he could have borrowed one half of the balance, and that he had a government insurance policy for \$10,000, payable to his wife, on which he could also have obtained a loan, did not, in the opinion of the Supreme Court, render him ineligible for aid under the Vermont statutes. At the time of the accident, Archambault had no money or tangible property, nor any immediately available resources to help him in a desperate situation. He was, *prima facie*, a "poor person in need of assistance."

But, said the court, under the statutes an application for relief is required. No formal application is specified and none is required. It is enough, if what is said and done is intended

as a request for public aid and so understood by the overseer of the poor to whom it is communicated. The court did not think that this requirement was complied with in the present case. The message that the plaintiff himself gave to the wife of the overseer simply requested the overseer to call him. The most that appears from the record of the interview between Musgrove and the overseer was that the latter was told about the accident and that the Archambaults might need help. More than this was required, the court said, to constitute an application. The judgment of the trial court for the plaintiff was unwarranted without an affirmative finding that such an application was made, and, in the opinion of the court, on the evidence the finding should have been made that an application was not filed. The fact that an emergency existed did not affect the liability of the town. The rights of the plaintiff are to be determined by the express terms of the statute and where the statute imposes no liability an emergency creates no right of action.

The judgment of the trial court for the physician was consequently reversed and the cause remanded.—*Peabody v Town of Holland (Vt)*, 178 A 888

**Malpractice Palate, Uvula and Pillars Removed During Tonsillectomy**—The patient, a minor 19 years old, sued the appellant, a physician, for malpractice, claiming among other things, that in performing a tonsillectomy, some fifteen years prior to suit, the physician removed the patient's uvula, palate and tonsillar pillars, causing a loss of speech. The trial court gave judgment for the patient but the court of civil appeals of Texas, Austin, reversed the judgment on the ground that the trial court erred in permitting the parents of the patient to testify that subsequent to the tonsillectomy the patient had had no apparent disease of his mouth or throat, and no disease of the head or ears. In the opinion of the court of civil appeals the absence of such disease could be proved only by expert testimony, and not by that of nonexpert parents. *Taylor v Shuffield (Texas)*, 52 S W (2d) 788, abstracted, *THE JOURNAL* (May 13), 1933, page 1561. The patient appealed to the Supreme Court of Texas.

In the opinion of the Supreme Court, the testimony in dispute was admissible and the court of civil appeals erred in its holding to the contrary. The testimony did not come within the rules relating to expert testimony, it was the statement of a fact of which the parents were competent to testify. The opinion of a lay witness, who is familiar with a person, is admissible to prove that person's general health, strength and bodily vigor, or his feebleness or apparent illness, or his change in physical condition from one time to another. The parents, in the present case, were not called on to make a diagnosis but to give testimony as to the apparent presence of any disease, not in a scientific sense but as a statement of a simple fact. The testimony, the court concluded, could not have misled the jury. The judgment of the court of civil appeals was therefore reversed and the judgment of the trial court for the patient was affirmed.—*Shuffield v Taylor (Texas)*, 83 S W (2d) 925

## Society Proceedings

### COMING MEETINGS

- American Academy of Orthopaedic Surgeons St Louis Jan 13-16 Dr Philip Lewin 104 South Michigan Boulevard Chicago Secretary
- Annual Congress on Medical Education Medical Licensure and Hospitals Chicago Feb 17-18 Dr W D Cutter 535 North Dearborn Street Chicago Secretary
- Middle Section American Laryngological, Rhinological and Otolaryngological Society Milwaukee Jan 11 Dr William E Grove, 324 East Wisconsin Avenue Milwaukee Chairman
- Mid Western Section American Laryngological Rhinological and Otolaryngological Society St Louis Jan 15 Dr Harry W Lyman Carleton Building St Louis Chairman
- Society of Surgeons of New Jersey Jersey City Jan 15 Dr Walter B Mount 21 Plymouth St Montclair Secretary
- Southern Section American Laryngological Rhinological and Otolaryngological Society Jackson Miss Jan 18 Dr Robin Harris Lamar Building Jackson Miss Chairman
- Western Section American Laryngological Rhinological and Otolaryngological Society Del Monte Calif Feb 12 Dr Carroll Smith Paulsen Building Spokane Wash Chairman

## Current Medical Literature

### AMERICAN

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Titles marked with an asterisk (\*) are abstracted below

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- Some Observations on Retinal Detachments E N DeWitt Bridgeport, Conn.—p 173  
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#### American Journal of Diseases of Children, Chicago

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Digestion of Milk and of Modified Milk in Vitro Dorothy Fetter and F W Schlutz Chicago—p 1101  
Digestion of Milk and of Modified Milk in Vivo Dorothy Fetter and F W Schlutz Chicago—p 1107  
Comparison of Reactions to Intracutaneous and Subcutaneous Injections of Dick Test Toxin in Six Hundred and Fifty Three Children M L Spivek Chicago—p 1113  
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\*Tuberculosis in Childhood Comparative Value of Cutaneous Tests and Analysis of Histories of Contact M J Fine Newark N J—p 1131  
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Evaluation of Incomplete Square Test of Visual Acuity for Young Children R L Wilder Karin A Petri and J L Marquis Minneapolis—p 1182  
\*Rheumatic Pleurisy with Particular Reference to Its Demonstration by Roentgen Study S Starr and P Parrish Brooklyn—p 1187

**Acute Epidemic Myalgia**—Rector bases his consideration of acute epidemic myalgia on nineteen patients aged from 5 months to 8 years. The disease usually occurred in a person apparently in excellent health, being ushered in abruptly by severe pain malaise and fever. In a few instances there was evidence of preceding infection of the upper respiratory tract. Pain was invariably the principal symptom. Unlike that most often described in adults, the pain was localized in the abdomen rather than in the thorax. Only three patients had pain limited entirely to the region of the thorax. Five patients had both abdominal and thoracic discomfort, and the other eleven had abdominal pain only. This was severe and paroxysmal in nature, usually inclined to be diffuse or vaguely localized in the mid-epigastrium and at times aggravated by movement. Anorexia was extreme, nausea and vomiting occasionally obtained. In some of the older children chills were common. A common symptom was profuse perspiration. The chest of each patient was normal. Abdominal manipulation usually elicited voluntary spasm and superficial tenderness similar to these conditions often encountered in pneumonia. The rectal temperature averaged 102.5 F. The leukocytes numbered from 9,000 to 17,110, with an average of 12,900; there was neutrophilia; the count averaging 75.6 per cent. The usual duration of the disease was four days. The recurrent type of infection is apparently much commoner in children for in the present series 75 per cent had a return of their febrile paroxysm usually on the third and

occasionally on the fourth day of illness. This recurrence appeared after an asymptomatic period of from twenty-four to seventy-two hours and was not unlike the 'dromedary phenomenon' of poliomyelitis. Three patients had two secondary paroxysms, and one child had three. The temperature was not as high as in the initial attack, and pain was rarely extreme. Unless the disease has assumed epidemic proportions, diagnosis is extremely difficult. In small infants the rapid, shallow respirations, dilatation of the alae nasi and expiratory grunt strongly suggest early pneumonitis, in older children the picture often resembles that of acute appendicitis or mesenteric adenitis. In localities in which dengue occurs, this disease also must be considered. If a plasmodium is of etiologic significance in this condition, as Small postulated quinine or one of its derivatives should theoretically be the therapeutic agent of choice. Therefore the author gave quinine sulfate orally in moderate amounts to two patients suffering from recurrent myalgia who had not responded to previous therapy. In both cases after quinine sulfate had been administered for twelve hours there was a complete cessation of pain and the temperature dropped to a normal level.

**Tuberculosis in Childhood**—Fine reports the responses to cutaneous tests and the family histories of 1,207 children from families containing tuberculous members. The Pirquet test appears to be less sensitive than the Mantoux test and less likely to cause a false positive reaction but there is a small but definite possibility of the Pirquet test causing a spurious negative reaction. Roentgen and clinical examination of the chest is of little value in the diagnosis of tuberculosis of the childhood type. The Loewenstein test, which is carried out by inoculation with tuberculin in a glycerin extract is described. The Loewenstein test is less sensitive than either the Mantoux or the Pirquet test, when the reaction to a Loewenstein test is positive, the reaction to the other cutaneous tests will almost certainly be positive. A positive reaction to the Loewenstein test is a convenient criterion of the need for care in a sanatorium. The high incidence of positive reactions to the Mantoux and Pirquet tests makes them of little value in segregating the group needing care in a sanatorium, but the lower incidence of positive reactions to the Loewenstein test makes it useful for this purpose. Children exposed to tuberculosis at home are more likely to have tuberculosis of the childhood type than are unexposed children. A child from a home in which a member has died of tuberculosis is subjected to a greater risk of contracting the disease than one from a home in which a relative is ill with tuberculosis. Boarders and lodgers with tuberculosis constitute a real menace to the health of children in that home. A tuberculous parent is a greater hazard to the health of a child than a tuberculous sibling.

**Icterus Index in the Infant**—Bonar employed the Davis capillary method to determine the daily bile index of the blood of 104 infants during the first twelve days of life. A daily icterus index curve was established, which showed that latent jaundice is not only a neonatal but a late fetal characteristic. The bilirubin levels of the blood of the umbilical cord and the blood of infants at birth were nearly identical and twice the normal value for adults. The index rose during the first five days to 53 after which there was a gradual decline, so that by the twelfth day it was twice the level found at birth. Clinical icterus followed essentially the same trend but while jaundice could not be detected in 30 per cent, the bile index showed that hyperbilirubinemia prevailed in all. The average index for the group without jaundice was decidedly lower than that for the group with jaundice and the peak was reached on the third day after which it receded, reaching the level at birth by the twelfth day. In the icteric group a higher peak was reached on the fifth day and at the end of twelve days the index was still twice the level at birth. Possibly owing to peculiarities of the skin at this age jaundice could not be detected definitely until the bile index was close to 30. The icterus index was uninfluenced by sex, loss in weight, coagulation or bleeding time, duration of labor or type of delivery. It was unusually low in the overweight group but only slightly higher in the underweight group. The average weight at birth of the group with jaundice with a high bile index was considerably lower than that of the group without jaundice. The fact that hemolysis occurred in 44 per cent of the samples of blood in spite of attempts to

prevent this by careful technic points to the presence in the neonatal blood of some inherent hemolytic factor so far unrecognized. Hemolysis was least frequent at birth and most frequent at the end of the first day. Samples of blood with high indexes did not hemolyze as readily as those with low indexes, an observation indicating that the bile salts do not cause hemolysis but rather protect against it. Records of three infants born jaundiced are given. All had high bile indexes with nonobstructive jaundice, and in two fatal hemolytic anemia developed.

**Rheumatic Pleurisy**—By routine anteroposterior and oblique views of the chest, Starr and Parrish frequently demonstrated rheumatic interlobar pleurisy during the active phases of rheumatic fever. By roentgen studies of an unselected series of hospitalized children, interlobar pleural thickening was demonstrated in 9 per cent of "normal" children, in 135 per cent of children with chorea alone and in 436 per cent of children with other manifestations of rheumatic fever. The incidence of thickened pleura in the group with rheumatic infection bears no relation to the incidence of previous pneumonia, pulmonary congestion of cardiac decompensation or tuberculosis of childhood. The greatest percentage of pleurisy was found to be associated with rheumatic pericarditis clinically, at necropsy and by roentgen examination.

### American Journal of Physiology, Baltimore

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- Facilitation of Motoneurons R Lorente de N6 St. Louis—p 505
- Summation of Impulses Transmitted to Motoneurons Through Different Synapses R Lorente de N6 St. Louis—p 524
- Survival and Increase of Epinephrine in Tissue Cultures of Adrenal Glands from Chick Embryos Margaret Reed Lewis Washington D C and E M K. Geiling Baltimore—p 529
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- Excretion of Phenol Red by Dog J A Shannon New York—p 602
- Clearance Extraction Percentage and Estimated Filtration of Sodium Ferrocyanide in Mammalian Kidney Comparison with Inulin Creatinine and Urea D D Van Slyke Alma Hiller and B F Miller New York—p 611
- Distribution of Ferrocyanide Insulin Creatinine and Urea in Blood and Its Effect on Significance of Their Extraction Percentages D D Van Slyke Alma Hiller and B F Miller New York—p 629
- \*Comparison of Anemia Produced by Feeding Young Rats on Human Cow and Goat Milk. H H Beard and T S Boggess, New Orleans—p 642
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- Interpretation of Monophasic Action Potentials from Mammalian Ventricle Indicated by Changes Following Coronary Occlusion H C Wiggers and C J Wiggers Cleveland—p 683

**Comparison of Anemia in Rats Fed Human, Cow's and Goat's Milk.**—Beard and Boggess state that the feeding of human milk to young weanling rats did not produce anemia. The drop in erythrocytes and hemoglobin in the cases of cow's

milk anemia was somewhat slower than in the cases of goat's milk anemia. Hypertrophy of the heart muscle, atrophy of the spleen and fatty degeneration of the liver were the most consistent gross pathologic observations in the anemic rats. The importance of iron in preventing these changes is discussed. The pathologic observations in experimental goat's milk anemia are not similar to those in pernicious anemia of man, and any close relationship between the two types of anemia must be denied. Iron, with and without copper, prevented the onset of the goat's milk anemia.

### American Journal of Public Health, New York

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### Am J Roentgenol & Rad Therapy, Springfield, Ill.

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- \*II Attempt to Produce Paget's Disease by Use of Anterior Pituitary Growth Extract and Parathyroid Extract Calcium Deposits in Kidney and Massive Calcium Deposits in Bone Marrow Produced by These Extracts R C Moebliig J M Murphy and L Reynolds, Detroit—p 465
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**Visualization of Reticulo-Endothelial System.**—By the intravenous injection of colloidal thorium dioxide, Robins and Goldberg visualized the liver and spleen. This visualization is conditioned by the fact that the thorium dioxide is taken up by the reticulo endothelial tissue. The bone marrow, some lymph nodes and the adrenals can be visualized in rabbits following larger doses. As far as known, the functions of the endothelial system are not disturbed by the presence of the thorium at least for a period of from two to three years. Studies of twenty-five rabbits reveal a marked tolerance to many times the visibility dose even if given over a long period. Tissue studies have failed to indicate any significant pathologic changes. The average human dosage is about 1 cc per kilogram of weight diluted with sodium chloride solution or dextrose or given undiluted. In rabbits the visualization dose is somewhat larger, being from 15 to 175 cc. With minute doses frequently repeated over a long period of time, they observed that the liver was the first to be demonstrated. There are practically no



immediate reactions. The question of remote effects is still to be determined, elimination is slow and some thorium remains in the tissues after a few years. Clinically it is indicated as a useful agent in establishing the diagnosis of a large number of conditions of the liver and spleen and may be of value in a great many other intra-abdominal conditions. It may also obviate exploratory surgery by establishing the presence of hepatic metastases. Until this procedure is proved innocuous, its use should be restricted to patients of the middle or older age groups or to cases in which definite malignant changes are found and the pertinent question of metastases is involved.

**Experimental Paget's Disease**—Moehtig and his associates attempted to produce bone lesions (Paget's disease) in adult dogs by the use of anterior pituitary growth hormone and parathyroid extract. Four dogs were observed over an average period of 231 days, divided arbitrarily into three periods of 100, fifty-five and seventy-six days. Three dogs received combined injections of growth hormone and parathyroid extract daily, and the fourth dog received only parathyroid extract daily. The average amount of growth hormone given was 358 cc., the average amount of parathyroid extract 13,008 units. In the three dogs receiving pituitary growth hormone and parathyroid extract massive replacement of bone marrow by metastatic calcium was observed. That the growth hormone played a part in this replacement by calcium is indicated by the fact that the fourth dog, receiving parathyroid extract alone, did not show these changes. Three of the dogs showed calcium deposits in the kidney, the greatest changes of this nature being in the dogs receiving growth hormone and parathyroid extract. Attention is called to the clinical condition of hyperparathyroidism with nephrolithiasis. Two of the three dogs receiving growth hormone plus parathyroid extract showed thyroid changes, such as seen in exophthalmic goiter, and the third dog showed changes of a colloid nature in the thyroid. This was thought to be due to the thyrotropic hormone of the pituitary extract. Excessive ovulation was shown to be present in these three dogs, which was also attributed to the gonadotropic hormone of the pituitary extract. During the course of the experiments, for a period of forty days, a high carbohydrate diet with parathyroid extract raised the blood calcium and lowered the blood sugar, blood phosphorus and blood phosphatase. This was a transitory effect. Clinical studies of ten cases indicate that a constitutional background is necessary for the production of Paget's disease. The authors found that a high percentage of patients suffering from Paget's disease have a constitutional background of familial diabetes, familial obesity and familial tallness. They have placed these patients on a measured carbohydrate (from 175 to 200 Gm of carbohydrate) and insulin (from 10 to 15 units three times a day) diet. The results observed over a short period of time with this regimen have been striking. The patients have lost their so-called bone pains within a few days and this is accompanied by a drop in the blood phosphatase. It is too early to say how long these benefits will endure.

**Röntgen Therapy in Neoplasms of Respiratory Tract**—Harris treated twenty-six cases of extensive intra-oral and laryngeal carcinomas by protracted röntgen radiation according to the principles of Coutard. Whether comparable results can be obtained by higher milliamperage technic and by the use of a filter of 0.5 mm of copper can be determined only by further experience. He believes that there are fewer complications during the treatment and less damage to the healthy tissue by the use of a heavier filter and lower milliamperage. By using portals of from 100 to 150 sq cm, a filter of 2 mm of copper with 200 kilovolts and a rate of from 3 to 5 roentgens per minute, from 3,000 to 3,600 roentgens measured with back-scattering may be given to some patients if protracted daily over a period of from twenty-five to thirty-two days. A maximum of 4,200 roentgens has been used in several cases. Two such fields may be used to crossfire a neck. The use of these factors has given the author favorable results in malignant conditions of the intrinsic and extrinsic larynx. The use of external radiation alone, such as was given until recently, is not usually sufficient to eradicate extensive intra-oral malignant changes. Following a course of protracted röntgen therapy, two laryngectomies and supplementary implantation of radon

seeds in three of the intra-oral carcinoma cases have been done without radionecroses. Meticulous care in the installation of the apparatus and good medical care before and during the treatment are requisites for good results.

### Anatomical Record, Philadelphia

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Cinematographic Studies of Rabbit Oviposition R. T. Hill E. Allen and T. C. Kramer New Haven Conn.—p. 239  
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### Annals of Surgery, Philadelphia

102:801-960 (Nov.) 1935

- \*Development of New Blood Supply to Heart by Operation C. E. Beck Cleveland—p. 801  
Traumatic Carcinoma of Breast E. Rixford San Francisco—p. 814  
Surgical Significance of Endometriosis J. C. Masson, Rochester Minn.—p. 819  
Ovarian Tumors with Endocrine Significance. J. V. Meigs Boston—p. 834  
Choice of Methods of Diverting Urinary Stream Above Level of Bladder H. Cabot and R. G. Scherer Rochester Minn.—p. 849  
\*Division of Spermatic Cord as Aid in Operating on Selected Types of Inguinal Hernia C. G. Burdick and N. L. Higinbotham New York—p. 863  
The Undescended Testis Its Fate After Satisfactory Scrotal Anchorage. O. H. Wangenstein Minneapolis—p. 875  
Subacute Streptococcus Viridans Septicemia Cured by Excision of Arteriovenous Aneurysm of External Iliac Artery and Vein. W. F. Reinhold Jr. and L. Hamman Baltimore—p. 905  
\*Treatment of Carotid Cavernous Arteriovenous Aneurysms W. E. Dandy Baltimore—p. 916  
Influence of Urinary Bladder Transplants on Hyaline Cartilage G. H. Copher St. Louis—p. 927  
Clinical Significance of Experimental Studies in Wound Healing E. L. Howes and S. C. Harvey New Haven Conn.—p. 941  
Study of Dehydration in Humans F. A. Collier and W. G. Maddock Ann Arbor Mich.—p. 947

**Development of New Blood Supply to Heart**—Beck applied the results of experiments in producing a collateral circulation to the heart to a patient suffering from coronary sclerosis. He states that the heart can be given a new blood supply experimentally. The collateral vascular bed was given to the patient on Feb. 13, 1935. Three and one-half months after operation the patient reported that he has been greatly benefited. Seven months since the operation he continues to work as a gardener, has no pain and states that he is cured. The author emphasizes the point that the work is still in the experimental stage and he does not recommend the performance of this operation until it is established by operation on a number of patients. The operation has been carried out on five additional patients with encouraging results.

**Division of Spermatic Cord in Inguinal Hernia**—Burdick and Higinbotham have observed patients in whom, at operation, the vessels had been practically destroyed without necrosis of the testicle, they decided to divide the cord deliberately and found that the testicle did not slough. The following indications, in their opinion, justify this radical procedure. 1. Recurrent hernias that have had one or more unsuccessful attempts at a radical cure in persons more than 50 years of age in whom the opposite testicle is apparently normal. 2. Recurrent hernias in younger subjects who are incapacitated from their usual occupation and who have an apparently normal testicle on the opposite side. These patients have usually had more than one attempt made at a repair, and, if at operation division of the cord offers a more favorable prognosis, the authors do not hesitate to divide it. 3. Large scrotal hernias in the aged, which are either irreducible or cannot be satisfactorily retained by a truss. In large sliding hernias division and resection of a part of the cord reduce the operating time at least a third. Furthermore, it permits two layers of muscle or fascia to be sutured to Poupart's ligament without any intervening tissue and without leaving a weak spot in either layer, which of necessity exists if the cord is present. In order to obtain the maximal benefit in saving time, it is necessary to divide the cord early in the operation. A ligature is placed



about the cord at its emergence through the internal ring and a second one as it enters the scrotum, the intervening tissue being excised. The collateral circulation is limited and it is believed that the lymphatic supply must aid in nourishing the gland until the arterial supply is sufficiently reestablished. In scrotal hernias it is unwise to disturb the lower end of the sac for fear of damaging the future collateral circulation. The authors do not deliver the testicle into the wound or remove the scrotal portion of the sac. The scrotum is elevated on a bridge for ten days. Gangrene seemed imminent in some cases and actually did occur in four. The patients are kept in bed for the usual time, depending on the type of hernia, and are advised to wear a suspensory until the swelling has subsided entirely. Many of the testicles atrophy, but it is surprising how many do not. Complete division of the spermatic cord has been employed in the repair of 200 inguinal hernias at Bellevue Hospital. The cord was divided on one side in 166 cases, and seventeen patients had hernia repair with cord division on both sides. The youngest patient was 28 years of age and the oldest 80. The average age for the series was 54.6 years. The procedure was employed in all types of inguinal hernia but was particularly favored in direct or indirect recurrent types to effect a stronger repair, and in older men in whom it was felt that the operating time could be shortened. Nine patients are dead, six being postoperative deaths. One patient died of pneumonia three and a half years after operation, one died of a fractured skull following an accident sixteen months after operation, and one died of heart disease two years after operation.

**Treatment of Carotid Cavernous Arteriovenous Aneurysms**—In two cases of carotid cavernous arteriovenous aneurysm, Dandy placed a silver clip on the intracranial portion of the internal carotid artery just before it divides. The object of this attack is to isolate the aneurysm. This is not strictly correct because there is one sizable branch, namely, the ophthalmic artery, between the point of the earlier ligation in the neck and the one intracranially. In one case this branch has had no effect on maintaining the fistula, which was cured immediately. In the other case it was almost a complete cure with complete return of the eyeball to normal, but a slight murmur persisted. It was necessary to excise most of the collateral branches entering the ophthalmic artery to complete the treatment. The exact treatment that should be used depends on whether or not the carotid artery can be sacrificed without cerebral disturbances. The physiologic test—compression of this artery with the thumb—should always be made beforehand in order to determine the exact type of ligation to be used. This test has long been emphasized as a necessary prerequisite by Matas. Roughly, the age of the individual is a fairly reliable guide in determining the safety or danger of total ligation but there are too many exceptions to permit ligation without the compression test. In an elderly person one could only partially ligate the internal or common carotid artery. When partial occlusion is advisable, the internal carotid is preferred with a band of fascia. Total arterial occlusion is permissible only when the collateral circulation is known to be adequate. Intracranial ligation of the internal carotid artery is advocated only when all the other arterial ligations have failed to effect a cure.

### Archives of Pathology, Chicago

20: 665-822 (Nov.) 1935

- Radial Inclusions of Giant Cells. E. F. Hirsch. Chicago—p. 665
- Base Protein Acid Compounds. M. H. Fischer and W. J. Suer. Cincinnati—p. 683
- Mechanism of Pathologic Calcification. W. E. Burge, O. S. Orth, H. W. Neild, J. Ash and R. Krouse. Urbana, Ill.—p. 690
- Susceptibility to Dental Caries in Rat. V. Influence of Calcium Phosphorus, Vitamin D and Corn Oil. T. Rosebury and M. Karshan. New York—p. 697
- Spontaneous Arteriosclerosis in Rats. W. C. Hueper. Wilmington, Del.—p. 708
- Mouse Leukemia. IX. Role of Heredity in Spontaneous Cases. E. C. MacDowell and M. N. Richter. New York—p. 709
- \*Nature of Anemia in Acute Leukemia. R. H. Jaffé. Chicago—p. 725

**Nature of Anemia in Acute Leukemia**—From a large series of cases of acute leukemia, Jaffé selected five which indicate that at least in some instances leukemia is preceded by an excessive destruction of blood cells and that the patient may succumb to the anemia when the leukemic changes are still too

insignificant to account for the lack of normal blood cells. In one case there were also evidences of a grave alteration of the granulated white blood cells. As a compensation for the excessive destruction of blood, a reactive myelopoiesis has been observed. Comparing the different foci of myelopoiesis, the impression was obtained that under the continuous stimulation of the destruction of the blood cells an increasing number of immature precursors of blood cells are called into existence until the hemocytoblastic stage is reached. Here and there the hemocytoblasts may reveal attempts at maturation, but rapid multiplication seems to prevent their differentiation. The author believes that there are principal differences between the aleukocytic diseases and leukemia. In some cases of agranulocytosis, aplastic anemia and hemorrhagic aleukia the precursors of the blood cells may fail to mature because of the lack of a hypothetic maturation factor, and the reverse of the formation of the blood cells to the hemocytoblastic stage occurs only in leukemia. It is also only in leukemia that throughout the body the mesenchyma acquires the potency to produce blood cells. The author's cases do not yield any definite information as to the causative agent of the initial anemia. An initial abnormal destruction of blood cells may be of significance in the pathogenesis of acute leukemia.

### Canadian Medical Association Journal, Montreal

33: 473-596 (Nov.) 1935

- \*Importance of Rest and Liver Therapy in Treatment of Subacute Combined Degeneration of Cord. R. F. Farquharson. Toronto—p. 473
- Blood Dyscrasias Amenable to Treatment by Splenectomy. E. S. Mills. Montreal—p. 480
- Splenectomy. Operative Procedure and After Care. A. T. Barn. Montreal—p. 482
- Relief of Pain During Labor. L. C. Conn and J. R. Vant. Edmonton, Alta.—p. 484
- Usefulness of Anesthetic Agents. J. S. Lundy. Rochester, Minn.—p. 490
- Survey of Mongolism. Review of One Hundred Cases. Elizabeth V. Warner. Toronto—p. 495
- Left Ventricular Failure. F. C. Hamilton. Toronto—p. 500
- \*Rationale of Malarial Therapy in Cerebrospinal Syphilis. E. C. Menzies. St. John, N. B.—p. 504
- Results of Routine Examination of Tuberculosis Contacts. A. Temple. Montreal—p. 507
- What About Tonsils? S. B. MacMillan. Toronto—p. 509
- Spontaneous Pneumocephalus and Cerebrospinal Rhinorrhea. Case. J. E. Plunkett and F. C. Lendrum. Rochester, Minn.—p. 512
- Papillary Carcinoma of Renal Pelvis. J. F. Branton. Hamilton, Ont.—p. 515
- Frequency of Nervous Lesions of Vermiform Appendix. Neuro-Appendicopathy. L. C. Simard. Montreal—p. 518
- Chordoma. Report of Three Cases. H. S. Coulthard and R. I. Harris. Toronto—p. 522
- Psychogenic Factors in Dermatoses. F. E. Cormia and D. Slight. Montreal—p. 527

**Treatment of Subacute Combined Degeneration of Cord**—Farquharson emphasizes the importance of the continued administration of large amounts of potent liver preparations and of prolonged rest in bed in the treatment of patients suffering from pernicious anemia with subacute combined degeneration of the spinal cord. The influence of other factors, such as the presence of complications, the role of physical therapy and reeducational measures, the effect of relief of the anemia and other manifestations of the disease on the neurologic symptoms and the importance of the location, extent and duration of the neurologic lesion is considered. Throughout the series improvement was greatest in the cases in which the neurologic symptoms and signs were of short duration. Improvement in symptoms far outdistanced the change in objective signs of neurologic disease. The fact that improvement in symptoms is quite out of proportion to the relatively less marked change in objective signs is not surprising. At best the signs of neurologic disease are but a crude measure of the change in structure or function. Of two patients showing a similar type of extensor response one may be unable to walk because of weakness and spasticity, while the other goes about with little disability. There appears to be no exact relationship between the extent of pathologic change in the cord and the severity of the manifestations of the disease. Infections, especially infected bed sores and infections of the urinary tract, slowed up recovery from the anemia and appeared to inhibit improvement of the neurologic manifestations. Physical therapy and reeducational measures often increased the comfort of the patient and were

helpful in convalescence but did not seem greatly to affect the ultimate result, provided the patient was eager to regain his lost functions. Severe manifestations of subacute combined degeneration of the cord may develop and progress in patients receiving liver therapy in the absence of definite anemia while the blood picture remains within normal limits, and under treatment with prolonged rest in bed and larger doses of potent liver preparations these symptoms and signs may be arrested and largely subside. The most marked improvement in the manifestations of subacute combined degeneration of the cord, however, usually occurs several weeks or months after the recovery from the anemia. Administration of potent preparations in the dosage necessary to arrest progression of the disease should be persisted in. No matter how excellent the treatment and how early it is started, there is never complete recovery. Each exacerbation leads to further permanent damage of nervous tissue. Patients with extensive destruction of the fiber tracts may carry on wonderfully well especially when they take increased amounts of rest. Such patients have less reserve and tire more easily than formerly. With great fatigue some of the neurologic symptoms may temporarily reappear.

**Malarial Therapy in Cerebrospinal Syphilis**—Menzies believes that malarial therapy is of great value in other forms of cerebrospinal syphilis, particularly tabes, and not in just dementia paralytica. Its value for tabes is not at present widely admitted, and yet he gives malarial infection to tabetic patients with more satisfaction than he does in any other type of cerebrospinal syphilis. He presents his first two cases of tabes treated with malaria, which he has had under observation since 1927. The patients are still suffering from a certain amount of disability, but the pain, which was such a distressing feature, was relieved and the progress of the disease has been stopped. These patients were not many months away from being completely bedridden, with imminent death. While the author's opportunities for treating tabetic patients have not been nearly so numerous as those for treating parietic patients, the experiences of the eight years since these original cases were first treated make him believe that malaria will yet be recognized as having great value in this form of cerebrospinal syphilis. Tryparsamide is often recommended for tabes. He has reason to believe that its use is definitely contraindicated in this type of neurosyphilis. Tryparsamide is of value in dementia paralytica, particularly in fulminating types with poor physical condition. In tabes, however, the danger of optic atrophy after its use is great. It is of no value in controlling the major symptom of pain. He believes that lumbar puncture should be done in every case of syphilis that is past the primary stage. If the lumbar puncture or the neurologic examination should indicate that the nervous system has been affected, he advises immediate inoculation with malaria, unless there are clear contraindications. During the last ten years he has seen more than 300 patients who had been treated for years with arsenamine, mercury, tryparsamide, typhoid vaccine, diathermy, intrathecal injections or various other procedures. With the single exception of tryparsamide, which in some cases of dementia paralytica did seem to be of value, he felt that these long drawn-out courses had not only done the patient no good but in many cases had merely served to lull both the doctor and the patient into a false sense of security, meanwhile allowing the deadly process to go on until no hope of restoration was left. None of these patients who had been treated so long recovered their mentality, even after infection with malaria. This was true even in cases in which the disease process had to all appearances been completely arrested. The patients became fit and healthy and the serologic tests became negative but mentally they remained hopelessly degenerated.

### Georgia Medical Association Journal, Atlanta

24 387-424 (Nov.) 1935

- Methods and Results in Treatment of Diabetic Children H Bowcock Atlanta—p 387  
Mechanism and Treatment of Nondiabetic Ketoacidosis R King Savannah—p 391  
Treatment of Clinical Acidosis P A Mulhern Augusta—p 395  
Pneumoperitoneum Following Operation for Hernia Case Report A R Rozar Macon—p 404  
Clostridium Welchii Report of Unusual Case Following an Abortion J B Pomerance Fort Benning—p 406

### Journal of Clinical Investigation, New York

14 725-956 (Nov.) 1935

- Study of Standardization of Digitalis I Method for Clinical Standardization F R Dieuaide, C L Tung and C W Bien, Peiping China—p 725  
Id II Relationship Between Laboratory Methods of Assay and Potency as Determined by Experimental Cumulative Poisoning and Clinical Standardization H B Van Dyke and R C Li Peiping, China—p 733  
Changes in Blood and Circulation with Changes in Posture Effect of Exercise and Vasodilatation J B Youmans, J H Akeroyd Jr and Helen Frank Nashville Tenn—p 739  
Studies on Immune Response of Rheumatic Subject and Its Relation to Activity of Rheumatic Process IV Characteristics of Strains of Hemolytic Streptococcus Effective and Noneffective in Initiating Rheumatic Activity A F Coburn and Ruth H Pauli, New York—p 755  
Id V Active and Passive Immunization to Hemolytic Streptococcus in Relation to Rheumatic Process A F Coburn and Ruth H Pauli New York—p 763  
Id VI Significance of Rise of Antistreptolysin Level in Development of Rheumatic Activity A F Coburn and Ruth H Pauli New York—p 769  
Id VII Splenectomy in Relation to Development of Rheumatic Activity A F Coburn and Ruth H Pauli New York—p 783  
\*Study of Gastric Pepsin in Various Diseases C R Mullins and C A Flood New York—p 793  
Effect of Splanchnic Nerve Resection and Sympathetic Ganglionectomy in Case of Paroxysmal Hemoglobinuria A C Ernestine and W J Gardner Cleveland—p 799  
Nature of Substance (S) Producing Pain in Contracting Skeletal Muscle Its Bearing on Problems of Angina Pectoris and Intermittent Claudication L N Katz E Lindner and H Landt, Chicago—p 807  
Further Observations on Changes in Electrolytes of Urine Following Injection of Parathyroid Extract R Ellsworth and W M Nicholson Baltimore—p 823  
Immunization of Human Subjects with Specific Carbohydrates of Type III and Related Type VIII Pneumococcus M Finland and J M Rueggsegger Boston—p 829  
Influence of Dosage and Route of Injection on Antibody Response of Human Subjects to Specific Carbohydrate of Type VIII Pneumococcus J M Rueggsegger and M Finland Boston—p 833  
\*Comparison of Hematopoiesis in Fetus and During Recovery from Pernicious Anemia Together with Consideration of Relationship of Fetal Hematopoiesis to Macrocytic Anemia of Pregnancy and Anemia in Infants M M Wintrobe and H B Shumacker Jr, Baltimore—p 837  
Clinical and Experimental Study of Stability of Colloid Osmotic Pressure of Serum Protein K Yanagi, Rochester N Y—p 853  
\*Relationship of Blood Glucose to Concentration of Lactose in Milk of Lactating Diabetic Women E Tolstoi New York—p 863  
Experimental Bundle Branch Block in Monkey G H Roberts J H Crawford and D I Abramson Brooklyn—p 867  
Dietary Protein in Hemorrhagic Bright's Disease II Effect of Diet on Serum Proteins Proteinuria and Tissue Proteins E H Keutmann and S H Bassett with technical assistance of Geraldine E Julian, Clara H Present and Helen E Van Alstine, Rochester N Y—p 871  
Addis Sediment Count and Blood Urea Clearance Test in Normal Pregnant Women C A Elden and J W Cooney, Rochester N Y—p 889  
Intubation Studies of Human Small Intestine IV Chemical Characteristics of Intestinal Contents in Fasting State and as Influenced by Administration of Acids of Alkalis and of Water W G Karr and W O Abbott with technical assistance of A B Sample Philadelphia—p 893  
Studies of Urea Excretion IX Comparison of Urea Clearances Calculated from Excretion of Urea of Urea Plus Ammonia and of Nitrogen Determinable by Hypobromite D D Van Slyke I H Page Alma Hiller and E Kirk New York—p 901  
Micro Method for Blood Urea and Automatic Urine Collector for Urea Clearance in Infants L E Farr New York—p 911  
Metabolism of Isolated Heart of Dogs Related to Age A E Cohn and J M Steele New York—p 915  
Studies of Sodium and Potassium Metabolism Effect of Potassium on Sodium and Water Balances in Normal Subjects and Patients with Bright's Disease E M Mackay and A M Butler New York—p 923  
\*Studies on Anemia of Pellagra T D Spies and A B Chinn Cleveland—p 941  
Action of Dinitrophenol and Insulin in Accelerating Metabolism of Ethyl Alcohol H W Newman and W C Cutting San Francisco—p 945

**Gastric Pepsin in Various Diseases**—Mullins and Flood studied the secretion of pepsin in patients with and without disease of the stomach. The results show a fairly high coefficient of correlation between the acid and pepsin secretion, viz. 0.74 for the entire group. In general, a high acid is likely to be accompanied by high pepsin and vice versa, but frequent exceptions are found. These observations are in general similar to those of Helmer Fouts and Zerfas who however, lay more stress on the frequent instances among their cases of dissociation of the acid and enzyme content. The very low values for pepsin in pernicious anemia also confirm the results obtained by

these investigators, though they used histamine as a stimulus. In general, patients with duodenal ulcer secrete more pepsin than do those without ulcer. This is in accord with the work of Vanzant, Osterberg and others, though the authors have not found as marked variations from the normal as they reported. They have not followed their patients long enough as yet to determine whether a high value for pepsin makes the prognosis less favorable, as these investigators believe. On the other hand, Polland and Bloomfield, in a small group of cases, noted no significant differences between the value for pepsin in cases of duodenal ulcer and in controls. It would seem that pepsin determination in cases of carcinoma of the stomach is of little help in diagnosis, since it apparently reflects only the usual picture of hyposecretion as seen in the acid values.

**Hematopoiesis in the Fetus**—Wintrobe and Shumacker present determinations of the erythrocyte count, mean corpuscular volume, mean diameter and proportion of nucleated red corpuscles and reticulocytes in the blood of fetuses and the newborn of man, the pig, the rabbit and the rat. In very young fetuses of the species examined, the erythrocyte counts are low and the red corpuscles are large when compared with the values for red cell count and size in the normal adult of each species. As the fetus develops, the erythrocyte count rises and the red corpuscles become smaller. The proportion of nucleated red corpuscles decreases rapidly, while the percentage of reticulocytes diminishes more gradually. In all the species examined, some macrocytosis was found to be still present at birth, and in the rat, rabbit, pig, cat and dog the erythrocyte count was lower than that of the adult. In man the erythrocyte count is approximately normal at birth. In the new-born dogs examined the counts were substantially below the adult values, and in the new-born rats they were approximately one-third those of the mature rat. These observations suggest that the macrocytosis of the new-born represents a final stage in the normal development of the blood. The blood of the fetus resembles in many respects that of cases of pernicious anemia which are being subjected to an effective, continuous and extremely potent stimulus to blood formation. It is suggested that the anti-anemic principle of Castle may be responsible for the described changes in the blood of the fetus and that this principle passes to the fetus from the stores of the mother. On this hypothesis it is possible to visualize the mode of development of "pernicious anemia" of pregnancy. The significance of this conception in regard to anemia in infants is considered.

**Blood Dextrose and Lactose in Milk of Diabetic Women**—Tolstov observed five diabetic lactating women in order to determine whether a quantitative relationship exists between the concentration of dextrose in the blood and of lactose in the milk. The blood sugar was elevated by means of dextrose ingestion and lowered by varying doses of insulin. It was found that the concentration of the milk sugar in the lactating diabetic woman is constant and is not influenced by the quantity of blood dextrose circulating at a given time. This fact is not in accord with Foa's conclusions. The author's data are based on results obtained on living diabetic women, while Foa's conclusions were drawn from results of perfusion experiments in which excised breasts of nondiabetic animals were used. The carbohydrate metabolism in normal nondiabetic women is normal, and it may therefore be argued that in healthy nondiabetic women the lactating breast may vary its lactose concentration with changes in the dextrose content of the blood. The results of the four experiments in which insulin was administered refute such objections. In diabetes, insulin aids in the utilization of carbohydrates. In other words it converts, at least for the period of its activity, a diabetic patient into a nondiabetic person. That being the case, the four diabetic women to whom insulin was given and whose blood sugar and milk lactose were studied were for the period of the insulin activity normal as regards their ability to utilize dextrose. The sharp drop in the blood dextrose following the administration of insulin supports this inference. Yet, in spite of this pronounced fall in the blood dextrose, three hours after the patient had received insulin the concentration of the milk sugar was not lowered. It remained remarkably constant even though there was progressively less circulating dextrose from which lactose was synthesized. This observation thus reveals

that the lactating diabetic woman secretes milk the lactose content of which does not differ from the normal, and that furthermore the concentration of the lactose is not influenced by variations in the blood dextrose.

**Anemia of Pellagra**—Spies and Chinn made determinations of blood values on persons who developed pellagra secondary to alcoholism. Nineteen of the thirty patients had anemia with an average red cell count of 3.5 million and an average hemoglobin value of 74 per cent. Of these nineteen, fifteen had a color index averaging 1.11 and a volume index above 1. Identical determinations made on the individuals used as controls gave an average color index of 0.98 and an average volume index of 1.04 (consistent with the normal values of Haden). Seventeen of the pellagrous patients had achylia gastrica, as evidenced by the absence of free hydrochloric acid, pepsinogen and rennin following the administration of histamine acid phosphate. Five of the remaining ten on whom gastric analyses were performed during the acute stages of the disease had definite hypo-acidity and decreased values of pepsinogen and rennin. The gastric juice in nearly all instances was markedly reduced in volume, nearly always being less than 20 cc. Often it appeared to be entirely mucous, but occasionally it was free flowing and limpid. The volume of gastric secretion increased following the injection of histamine acid phosphate, but even with the increase the majority of patients did not have as much as 20 cc. of gastric juice that could be withdrawn from the stomach. The degree of anemia did not seem to be significantly related to the degree of hypochlorhydria or achlorhydria. It is theoretically conceivable that the anemia associated with pellagra may be caused by one or a combination of the following factors: dysfunction of the stomach, failure of adequate ingestion of iron or other nutritional substances important in erythropoiesis, and possible hepatic changes interfering with storage of the antianemic factor.

## Journal of Nervous and Mental Disease, New York

82 497 612 (Nov.) 1935

- Occurrence of Trigeminal Neuralgia in Patients Having Multiple Sclerosis Together with Observations on Other Types of Associated Pain and Sensory Disturbances J. M. Meredith and G. Horrax, Boston—p. 497.  
Postoperative Psychosis: Suggestions for Prevention and Treatment. Annette C. Washburne and Marie L. Carns Madison Wis.—p. 503.  
Parkinsonian Syndrome Due to Chronic Epidemic Encephalitis (von Economo Type) Clinico-Anatomic Study of Two Cases M. A. Bahr Indianapolis—p. 514.  
Differential Aspect of Semantic Component in Relation to Psychiatry R. S. E. Murray Lyons, N. J.—p. 525.  
Amyotrophic Lateral Sclerosis Syndrome and Trauma S. E. Jelliffe New York—p. 532.

## Maine Medical Journal, Portland

20:165 178 (Nov.) 1935

- Some Interesting Cases of Plastic Surgery of the Face. T. J. O'Sullivan Portland—p. 167.  
Endemic Goiter B. I. Cassin Rumford—p. 175.  
Artificial Muscles for Convalescing Poliomyelitis Cases R. O. Meisenbach Portland—p. 176.

## New England Journal of Medicine, Boston

213 893 950 (Nov. 7) 1935

- Modern Treatment of Cranio-cerebral Injuries with Especial Reference to Maximal Permissible Mortality and Morbidity D. Munro Boston.—p. 893.  
\*Prognostic Significance of Spontaneous Diuresis in Acute or Subacute Disease of Liver C. M. Jones and Frances B. Eaton, Boston—p. 901.  
Myxedema Heart Report of Case J. C. Gant Boston—p. 918.

**Spontaneous Diuresis in Disease of Liver**—Jones and Eaton state that a definite diuresis occurred in a group of patients suffering from severe acute and subacute liver disease due to various causes. Absence of an increased urinary output was seen only in the relatively mild cases that improved rapidly or in cases that did not respond to treatment and came to a fatal termination. The degree of diuresis varied in individual cases and as a rule was less in patients who presented no clinical evidence of edema, ascites or hydrothorax. In many individual cases a pronounced and prolonged increase in urinary output occurred during the period of clinical improvement, even in the absence of any evidence of an abnormal accumulation of fluid in the serous cavities or in the tissues. Such spontaneous

increases in urinary output were associated with rapid improvement in all symptoms, and at times the change was extremely striking once diuresis was established. In only three out of thirty-seven cases showing diuresis during the course of the disease was there a failure to improve, otherwise improvement was continuous following the establishment of a real diuresis, and the patient either recovered completely or at least entirely recovered from the acute liver injury even though there remained some permanent damage to the liver. The nature of the acute or subacute liver injury seemed to have no relation to the patient's ability to establish a diuresis and it seems highly probable that the occurrence of this phenomenon was associated directly with an improvement in the function of a previously abnormal liver. The authors believe that the finding of such a shift in body fluids offers an excellent means of demonstrating changes in liver function and may be used clinically as a valuable prognostic aid in patients suffering from liver disease. They stress the probable difference between the diuresis frequently noted after the use of salyrgan and that occurring without the administration of diuretic drugs. In the cases showing a spontaneous diuresis, prolonged clinical improvement apparently is as much more consistent result.

### New Jersey Medical Society Journal, Trenton

32 625-682 (Nov.) 1935

- Primary Carcinoma of Lung Roentgen Diagnosis of Primary Carcinoma of Lung W Klein New Brunswick—p 631  
Id. Peroral Endoscopic Study H B Orton Newark—p 635  
Id. Clinicopathologic Classification of Carcinomas of Lung S E Moolten New York—p 639  
Id. Surgical Treatment R H Dieffenbach Newark—p 645  
Id. Roentgen Therapy M Friedman Newark—p 648  
Treatment of Functional Psychoses with Fever Therapy Report of Results of Fifteen Hundred and Ninety Eight Cases R G Stone and J B Spradley, Trenton—p 650  
Hypothyroidism Report of Case with Myxedema M Molitch Jamesburg—p 654  
Tuberculosis Cavities Their Pathogenesis Mechanism and Treatment P N Coryllos New York—p 657

### Philippine Islands Med Association Journal, Manila

15: 515-582 (Oct.) 1935

- Widal Reaction in Vaccination and in Disease J Z S Cruz Manila—p 515  
Classic Cesarean Section in Potentially Infected Cases A Villarama Manila—p 523  
Metabolic Theory of Carcinogenesis M M Gallardo Dasmaguete Negros Oriental—p 525

### Psychiatric Quarterly, Albany, N Y

9: 521-684 (Oct.) 1935

- Survey of Mental Hygiene Needs of Two Hundred and Fifty School Children Study in Organizing a Community in Child Guidance Elmor S Noetzel and H M Hildreth Syracuse N Y—p 525  
Race and Mental Disease in New York State B Malzberg Albany, N Y—p 538  
Physiotherapy and Hydrotherapy as Important Adjuncts in Treatment of Mental Disease A S Palombo Brooklyn—p 570  
Basal Metabolism in Manic Depressive Psychoses. L R Wolberg Kings Park, N Y—p 586  
The Paroled Father in the Mother's Allowance Family F Rosenheim Central Islip N Y—p 610  
Psychic Defense Against Disagreeable Reality P Miller Kings Park N Y—p 617  
Treatment of General Paresis with Combined Electropyrrexia and Tryparamide L E Hinsie and J R Blalock, New York—p 631  
Treatment of General Paresis Comparative Results H L Levin Buffalo—p 636  
General Paresis Treated by Modern Methods Report of Cases E. Kusch Ward's Island, N Y—p 642  
Modified Sedation with Secondary Butyl Ethyl Barbituric Acid in Psychosis Anna A Gronlund Marcy N Y—p 651

### Rhode Island Medical Journal, Providence

18 147-160 (Oct.) 1935

- Medical Indications for Transfusion F H Chafee Providence—p 147  
Some Surgical Aspects of Blood Transfusion J P Eddy 3d Providence—p 150  
Measles Immunization D L Richardson Providence—p 156

### South Carolina Medical Assn. Journal, Greenville

31: 187-206 (Oct.) 1935

- Jannide Its Differential Diagnosis T M Peery Charleston—p 187  
Treatment of Severe Cutaneous Burns. J N Walsh Moncks Corner—p 189

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

### British Journal of Dermatology and Syphilis, London

47 389-440 (Oct.) 1935

- Dermatology Yesterday and Today A J Hall—p 389  
Macrolichen (Dermatosis Papulosa Somaliensis) A Castellani—p 395  
Improvement Occurring in Cases of Calcinosis Universalis in Children F P Weber—p 400

### British Journal of Ophthalmology, London

19: 545-592 (Oct.) 1935

- Subjective Lightning Streaks R F Moore—p 545  
Blindness Eye Diseases and Their Causes in the Land of Canaan N I Shumkin—p 548  
Endothelioma of the Optic Nerve Sheaths Case H B Stallard—p 576

### Clinical Journal, London

64 439-482 (Nov.) 1935

- Causes and Treatment of Anemia C Seward—p 439  
\*Differential Diagnosis of Pelvic Tumors A Gough—p 447  
Malignant Tumors of Bone H Platt—p 452  
Goiter A E M Woolf—p 459  
Management of Cases of Head Injury L. Rogers—p 465  
Diagnosis and Treatment of Detachment of the Retina H Ridley—p 469  
Method of Dealing with Accidents at Moscow P L. Giuseppe—p 470

**Differential Diagnosis of Pelvic Tumors**—Gough discusses tumors arising in the female pelvic organs and lists the acute complications of actual tumors as 1 Ovarian cyst or tumor with twisted pedicle. There is usually a sudden onset of pain, with collapse and perhaps later a moderate rise of temperature. A tender swelling is found and it is as a rule not very movable, owing to the adhesions that rapidly form after torsion. In some cases the symptoms are far less urgent. There may be no pain, only gradual deterioration of health, leading to a low 'typhoid' state. 2 In suppurating ovarian cyst there is severe and increasing pain with high temperature, and, if the infection spreads, there may develop the symptoms and signs of a diffuse peritonitis. 3 In the cases of ruptured ovarian cyst that he has encountered the symptoms have not been acute. Sometimes the patient is aware of something giving way inside her body. There may be some pain and shock, but this soon passes off. An examination shows the signs of fluid in the peritoneal cavity, and a pelvic tumor may or may not be felt at the same time. In such cases there may be a strong suspicion of a malignant ovarian growth, and it is a pleasant surprise on opening the abdomen to find a perfectly innocent condition. 4 Myoma with torsion is rare. A single pedunculated subserous myoma may be twisted, or the greater part or the whole of the uterus may be involved. 5 A myoma with red degeneration, perhaps one of many, becomes necrotic and when examined after removal shows a characteristic rose color. This is especially liable to happen during pregnancy. The complication is apt to cause the most intense pain. 6 A ruptured vein on the surface of a cyst or myoma may occasionally cause a grave internal hemorrhage. In actual practice the diagnostic problems may be even more complicated, since two or more may be present at the same time. For example, there may be a tumor with inflammatory complications, a tumor coexisting with a pregnancy, or two tumors of entirely different kinds. In some of the most difficult cases the diagnosis may have to be made through an incision.

### Journal of Tropical Medicine and Hygiene, London

38 265-276 (Nov.) 1935

- Experimental Studies on Filarial Periodicity E H Hinman—p 265  
\*Three Clinical Signs Useful in Diagnosis of Chronic Amebic Colitis A Castellani—p 267  
Treatment of Amebic Colitis with Iodoform A Castellani—p 268

**Diagnosis of Chronic Amebic Colitis**—Castellani believes that the correct diagnosis in cases of chronic colitis difficult to diagnose is facilitated if one keeps in mind and searches for the presence of three clinical signs. 1 With the patient lying on his back, fairly heavy mediate percussion is carried out on a line drawn from the tip of the ensiform process to the umbilicus, this line being a prolongation of the midsternal line. The percussion is carried out from the umbilicus toward the sternum.

When a spot is reached immediately below the ensiform process, the patient feels pain, as is often evidenced by facial wincing. The symptom may be elicited also by palpation, the tip of the forefinger being pressed at various spots along the line. A similar tender spot is found also in cases of duodenal ulcer and, at times, of simple hyperchlorhydria, but is usually situated somewhat lower down. The tender spot found in cases of cholecystitis is more to the right, just outside the right rectus muscle. 2 With the patient on his back, rather firm but not heavy percussion is carried out along the middle axillary line. The upper limit of the dullness may be as much as 1 or 2 inches above the normal, which usually is in the seventh space or on the eighth rib, while on the mammary line the dullness of the liver has practically a normal limit, which, with this type of percussion, is generally on the sixth rib or the sixth space. The midaxillary line is traced and from a point two finger-breadths (about 4 cm) below the nipple a horizontal line is drawn meeting the midaxillary line at a right angle. If on percussion there is dullness at the spot where the two lines meet and for a short distance outside it, the sign is positive. 3 When the patient sits up in bed, percussing the back discloses a band of dullness at the right base, in which the tactile fremitus is at times increased. This sign is probably due to the liver being enlarged and pushing the diaphragm upward, thereby causing a partial pseudoconsolidation or addensation of the lung tissue. The three signs may be present in the same patient, but frequently only one or two are present.

### Medical Journal of Australia, Sydney

2 521 568 (Oct 19) 1935

- Extra Articular Osteosynthesis for Recent Fractures of Neck of Femur  
Discussion of Technique and Report of Personal Experiences T King  
—p 521  
Poisonous Shellfish Joyce Allan—p 554

### Practitioner, London

135 609 724 (Nov) 1935

- Recent Work on Otosclerosis A A Gray—p 609  
Acute Suppurative Otitis Media and Mastoiditis Some Remarks on  
Diagnosis and Treatment N Patterson—p 619  
Conservative Treatment of Middle Ear Suppuration F J Cleminson  
—p 629  
Hearing Aids Phyllis M Tookey Kerridge—p 641  
Favorite Prescriptions XI Pharmacopoeias of London Throat Nose  
and Ear Hospitals D McKenzie—p 655  
Swimming Problems in Children and Adolescents R Miller—p 664  
Traumatic Injuries to the Knee Joint J A Mackenzie—p 673  
Some Recent Advances in Endoscopy M Ellis—p 684  
System of Treatment of Chronic Rheumatism A T Todd—p 692  
The Royal Commission on Vaccination 1889 1896 W J Collins—p 703

### Quarterly Journal of Medicine, Oxford

4: 345 440 (Oct) 1935

- Sugar Tolerance in Obese Subjects Review of Sixty Five Cases R F  
Ogilvie—p 345  
Idiopathic Steatorrhea Ten Cases T E H Thaysen—p 359  
\*Hypochlorhydria in Asthma with Especial Reference to Age Incidence  
Marjorie Gillespie—p 397  
Blood Hydrogen Ion Concentration and Lactic Acid in Different Types  
of Heart Disease I Harris E W Jones and C N Aldred—p 407  
Skin Reactivity to Glycerinated Veal Broth and Its Bearing on Spec-  
ificity of Tuberculin Reaction J Freund and P D Hart—p 417  
Some Types of Respiration in Neuroses R V Christie—p 427

**Hypochlorhydria in Asthma**—Gillespie carried out fractional test meals on 109 asthmatic patients. Low free acidity was found in 51.5 per cent and low total acid in 41.2 per cent of cases. Excess mucus and increased combined acidity were also present in many cases. Hypochlorhydria was found to be most common in asthmatic children less than 15 years of age, and less so in young adults. It again became more common in those nearing middle age. It would appear that gastric acidity does not remain the same throughout life in allergic persons but tends to increase in a certain percentage of cases about puberty. Female asthmatic patients from 15 years of age upward showed a higher percentage of hypochlorhydria than males of the same age. Before the age of 15 there was practically no difference in the sex incidence. Sensitivity as shown by skin tests, bore no apparent relationship to the hypochlorhydria. Repetition of the analyses after treatment showed definite change in 59 per cent of cases. Improvement in gastric acidity in originally hypochlorhydric cases coincided with clinical improvement.

### South African Medical Journal, Cape Town

6 657 696 (Oct. 12) 1935

- Robert Koch and Landmark in History of Medicine D P Marais  
—p 659  
Mental and General Disorders Due to Parasitic Worms F G Cawston  
—p 663  
The Psychopathology of the Sick J McLean—p 665

### Tubercle, London

17 49 96 (Nov) 1935

- \*Blood Picture in Pulmonary Tuberculosis L E Houghton—p 49  
Type of Causal Organism in Fifteen Hundred and Two Recent English  
and Three Hundred and Twenty Recent Irish Cases of Pulmonary  
Tuberculosis W M Cumming—p 67  
Intestinal Tuberculosis Comparative Value of Triboulet Test and Clin-  
ical Findings in Diagnosis J T N Roe—p 79

**Blood Picture in Pulmonary Tuberculosis**—Houghton considers the results of blood examinations in more than 1,000 cases with the object of correlating the clinical condition and progress of the patients with the blood observations. In a large proportion of the cases, multiple blood examinations have been made. Modifications in the blood picture are found in all active or recently active cases of pulmonary tuberculosis. The degree of activity and auto-inoculation are faithfully reflected in the blood picture, the pathologic changes being (1) decrease in the lymphocyte and eosinophil percentages and increase in the monocyte and neutrophil percentages, (2) decrease in the von Bonsdorff count and (3) increase in the sedimentation rate. The different criteria are not always influenced to the same extent in the same patient, and it is concluded that each factor in the hemogram represents a different aspect of the patient's reaction to his infection. The sedimentation rate represents altered metabolism and is a method of assessment of constitutional disturbance. The von Bonsdorff count is a method of assessment of toxemia and the differential count as has been shown by many observers reflects the changes that are taking place in the lungs. The factors making up the hemogram can be conveniently expressed as a single figure, which is referred to as the index. The value of the blood picture in prognosis is discussed and the fate of 100 cases after discharge from the hospital is compared with their previous blood condition. The blood picture and index are of value in prognosis. Whereas routine sanatorium treatment does not tend markedly to change the blood picture dramatic improvements can be brought about by certain methods of collapse therapy and by phrenic operations. Progress can be accurately assessed and clinical breakdown often anticipated by serial blood examinations. The blood picture is of value in selecting cases for special treatment and in controlling the course of treatment. There is a characteristic blood picture in cases of phthisis in which chronic bronchitis is a prominent complication. The blood provides an accurate indication of the true pathologic status in cases of pulmonary tuberculosis.

### Chinese Medical Journal, Peiping

49: 827 1074 (Sept) 1935

- Influence of the Past on the Present and Future of Medicine G C  
Robinson—p 827  
Revised Medical Curriculums C K Chu—p 837  
Proposed Curriculum for Medical Colleges Offering Six Year Course  
R S Greene—p 847  
Proposed Basic Medical Curriculum C C Chen—p 861  
Medical Education in a Mission School W R Morse—p 868  
Economics of Medical Schools and Hospitals in China F C Yen—  
p 887  
Some Statistics on Medical Schools in China for the Year 1933 1934  
T Lee—p 894  
Comments on Tentative Regulations for Higher Vocational Nursing  
Schools Gertrude E Hodgman—p 903  
Medical Social Workers Their Work and Training Ida Pruitt—  
p 909  
Survey of Medical Libraries in China Julie R Tai—p 917  
Some References on Medical Education Julie R Tai—p 926

### Japanese Journal of Obstetrics & Gynecology, Kyoto

18 355-422 (Oct) 1935

- Nutritive Value of Incomplete Albumin (Buckwheat Albumin) and Its  
Influence on Ovarian Function Y Nitta—p 356  
Asphyxia Neonatorum Its Cause and Mechanism with Especial Ref-  
erence to Fetal Heart Sounds and Labor Traumatism of the New-  
Born H Yagi—p 375  
Influence of Medicaments Injected into Female Rabbit on Development  
of Fetuses Especially on Growth of Their Epiphyseal Centers of Long  
Bones of Limbs and Bones E Terada—p 396  
Clinical Significance of Morphologic Change of Blood in Patients of  
Cancer Uteri T Ohga—p 412



## Paris Médical

2: 289 324 (Oct 19) 1935

- Medical Diseases of Kidneys in 1935 Annual Review F Rathery and M Dérot.—p 289  
Uremia of Malignant Diphtheria J Chaler.—p 303  
\*Nephritis of Transfusion A. Tzanck and R. Moline.—p 308  
Urology in 1935 Annual Review R Dossot and J J Soyer.—p 315

**Nephritis Complicating Blood Transfusion.**—Tzanck and Moline discuss the nephritis that is occasionally reported as complicating blood transfusion. Clinically, four phases can be identified. The stage of onset is usually sudden. Often the first symptoms of anguished appearance, headache, lumbar pain and sometimes vomiting occur during the transfusion of the first small amounts of blood. In some cases dyspnea is marked. The second stage of anuria or oliguria usually begins from six to twenty-four hours later. It is often marked by hematuria, albumin, diminished urea and chlorides and granular casts. The third stage, in which considerable amounts of fluid are eliminated through the kidneys, is inconstant. When it occurs however, the urine passed remains low in urea and chlorides. The fourth and final stage follows a delay of about ten days or two weeks, during which time the nephritis develops. Sometimes there are atypical cases not following these stages or developing edema. The etiology is usually the transfusion of a noncompatible blood. The nephritis has some relationship to that produced by chemicals and by toxins. It seems to be primarily a chemical nephritis, which has been called a "nephritis of intolerance." To prevent it care should be used in choosing a compatible blood donor. Treatment is symptomatic. Injections of physiologic solution of sodium chloride have been employed with some success. Decapsulation, paravertebral anesthetic infiltration and high spinal anesthesia have also been used.

## Semana Medica, Buenos Aires

42: 1197 1272 (Oct 24) 1935 Partial Index

- Tumor of Scapula Triangle Case G Bosch Arana and M L Insua.—p 1197  
Recidivation of Infantile Paralysis Case A Casaubon and Sara Cosoy.—p 1201  
Fibroma of Fallopian Tube Case N Palacios Costa and A Falsa.—p 1214  
Evolution of Diabetes After Phrenicectomy in Pulmonary Tuberculosis R. A. Izzo and A. Casanegra.—p 1217  
Diagnosis of Normal Presentation in Labor Simulating Abnormal Conditions Due to Pressure of Urine in Bladder T. A. Chamorro.—p 1228  
\*Dentition and Fontanels Sign of Congenital Syphilis F. Ugarte.—p 1243

**Ossification of Fontanels and Dentition in Congenital Syphilis.**—Ugarte states that there is a parallelism between the time of ossification of the fontanels and the time of teething. In normal infants the fontanels are ossified between the fourteenth and eighteenth months and the teeth erupt between the seventh and tenth months. The presence of infection especially congenital syphilis, produces a dissociation of the fontanel-dentition correlation. This may be of the type of early fontanel ossification with late teething or of late fontanel ossification with early cutting of the teeth, the latter being the more frequent. Its presence is of diagnostic value as a presumptive sign of congenital syphilis. The author gives a brief report of several cases showing both types of dissociation.

42: 1273 1348 (Oct 31) 1935 Partial Index

- \*Morbid Alternations in Leukorrhea. R. Araya.—p 1273  
\*Exophthalmic Goiter and Hyperthyroidism in Pregnancy R. Bustos Morón.—p 1279  
Treatment of Acute Gonorrhea E. Castañón.—p 1292  
Venereal Lymphogranulomatosis M. I. Quiruga and P. Bosq.—p 1298  
Intestinal Occlusion by Merkel's Diverticulum R. Donovan and R. Bueno.—p 1310  
Rapid Intravenous Cholecystography J. A. Orfila.—p 1315

**Morbid Alternations in Leukorrhea.**—Araya states that there is a type of leukorrhea of extragenital origin the suppression and reappearance of which either spontaneous or provoked, results in the appearance or disappearance of neuroarthritic diseases. It can be differentiated from genital leukorrhea by the lack of involvement of the genital organs and the actual or past diathetic condition of the patient. The alternating diseases are manifestations of an anaphylactic reaction of the proteinemic type due to the action of nonmodified genital albumins that act as allergens on distant organs and systems after

having been absorbed by the vaginal and uterine mucous membranes because of their diathetic hypersensitiveness. Local treatment fails in these cases, but a general treatment, modifying the diathesis of the patient, results in recovery. Satisfactory results were obtained by a general antidiathetic treatment in the six cases reported by the author.

**Exophthalmic Goiter and Hyperthyroidism in Pregnancy.**—Bustos Morón states that the association of pregnancy with exophthalmic goiter or toxic adenoma is rare. It was found in only five of more than 30,000 pregnancies seen by the author at the obstetric clinic, Eliseo Canton, and three of the cases were exophthalmic goiter. Exophthalmic goiter and toxic adenoma in pregnancy are aggravated by the intensification of the cardiac symptoms, which may be controlled by a combined treatment of rest and the administration of aqueous solution of iodine in daily doses of from ten to twenty drops for ten or twelve days at intervals of from five to seven days. If the treatment fails, surgical removal of the goiter or of the adenoma is indicated. The operation has no contraindications except in certain patients who are in the terminal stages of hyperthyroidism. It is well tolerated, does not interfere with pregnancy, and results in marked improvement of the patient. It is advisable to operate during improvement after medical treatment, administering some opiates for the prevention of possible spontaneous abortion. In cases of threatening cardiac insufficiency due to advanced stages of hyperthyroidism aggravated by gravidic toxicosis induction of abortion or of premature delivery is indicated. The latter treatment and the surgical removal of the goiter are indicated as complementary to each other in certain grave cases of hyperthyroidism. Recidivations of the thyroid crises during future pregnancies, in patients in whom the operation was previously performed, indicate an incomplete removal of the thyroid parenchyma and a repetition of the operation. The treatment of hyperthyroidism in pregnancy makes hospitalization of the patient necessary. Pregnancy is contraindicated in cases of advanced hyperthyroidism with cardiac and local symptoms (compression of the larynx or the trachea by the goiter). Temporary avoidance of pregnancy is advisable in cases of less grave hyperthyroidism, and probably sterilization of the patient in cases of uncontrollable hyperthyroidism.

## Beitrage zur klinischen Chirurgie, Berlin

162: 337 512 (Oct 23) 1935 Partial Index

- Rheumatic Stiffening of Vertebral Column F. Federschmidt.—p 350  
Healing of Bone Fractures and Internal Secretions E. R. Heydemann.—p 362  
\*Obliteration of Varicose Veins Roentgenologically Controlled K. E. Herlyn.—p 385  
Ultimate Results of Tuberculous Hip Joint Inflammation K. von Haefen.—p 404  
\*Treatment of Acute Appendicitis and Its Complication in the Göttingen Surgical Clinic Between 1912 and 1934 W. Greiner, R. Schrader and C. Stienel.—p 426

**Obliteration of Varicose Veins.**—Herlyn reports a method of treating varicose veins of the lower extremities in the Göttingen surgical clinic. The aim was to produce the widest possible obliteration by a single injection. Theoretically, this could be accomplished by injecting a sufficient amount of an obliterating substance into veins rendered bloodless, and retaining the solution in them for the longest possible period. Rendering the veins more or less empty is accomplished by placing a patient in a recumbent position with the leg slightly elevated and applying cuff constriction to the upper part of the thigh. The obliterating substance was invert sugar. In the last fifty cases a small quantity of opax was added to the sugar solution, making it possible to control roentgenologically the spread of the injected fluid. The amount injected varied between 5 and 30 cc. The constriction was released on removal of the needle, and a light compressing bandage was applied to the leg. The patients were not confined to bed. Since 1929 several hundred cases were thus treated without an instance of fatal embolism, infarct local necrosis or phlebitis. With this method it was found possible to accomplish extensive vein obliteration with a single injection.

**Acute Appendicitis.**—Greiner and his associates report the results of 4,248 appendectomies performed for acute appendicitis between 1912 and 1934 at the surgical clinic of the University of Göttingen. The mortality in a group of 3,462 cases in which operation was performed in the acute stage (within the first



forty-eight hours) was 14 per cent. The mortality in a group of 786 cases in which operation was performed in the late stage (after forty-eight hours) was 95 per cent. The total mortality was 29 per cent. There were 161 cases of early diffuse purulent peritonitis giving a mortality of 217 per cent. There were 145 cases of late perforative diffuse peritonitis with a mortality of 40 per cent. The total mortality for the group of perforative diffuse purulent peritonitis was 304 per cent. In 103 cases of early palpable tumefaction treated conservatively there was one death (1 per cent). In 208 cases of late palpable tumefaction, likewise treated conservatively, there were two fatalities (1 per cent). The authors point out that the mortality in the late though uncomplicated cases was 26 per cent, while the mortality in the cases in which operation was performed early was only 0.3 per cent in spite of the fact that even in the latter complications are already present in at least 15 per cent. They believe, therefore, that operation in the late uncomplicated cases should be postponed to a later period, as there was no mortality at all in their interim cases. They adhere to the forty-eight hour rule. In all acute cases falling within the period of the first forty-eight hours, operation is to be performed. Aschoff showed that the average time for the development of complications in acute appendicitis is thirty-three hours, at forty-five hours they are fully developed. If symptoms show a tendency to recede, the operation is to be postponed. The authors advocate a retroperitoneal incision and drainage of abscesses. The problem of diffuse purulent perforative peritonitis presents a number of controversial points, such as whether to intervene or to treat them conservatively, whether merely to incise or to remove the appendix, whether or not to drain, and how to drain. Improvement in the results is probably due to general measures, such as infusions of dextrose, the use of colon bacillus serum and the combating of vasomotor collapse.

### Deutsche medizinische Wochenschrift, Leipzig

61 1791 1830 (Nov. 8) 1935 Partial Index

Cause of Cancer in Light of Research on Heredity O. Koehler — p. 1791

Third Ventricle F. von Müller — p. 1796

\*Relative Aortic Insufficiency in Exophthalmic Goiter G. W. Parade — p. 1799

Clinical Forms of Gas Bacilli Infections K. Bingold — p. 1800

Extranasillar Localization of Primary Lesion of Diphtheria K. Okenius — p. 1803

#### Relative Aortic Insufficiency in Exophthalmic Goiter

—Parade's case demonstrated that the closing of the aortic valves may become impossible in the course of exophthalmic goiter and that this defect is closely related to the thyrotoxic circulatory disturbances. With the cessation of the thyrotoxic circulatory symptoms, the diastolic aortic sound disappeared. In the reported case, this was observable during the iodine treatment, which may greatly reduce the thyrotoxic circulatory manifestations, as well as after the thyroidectomy, which counteracted the exophthalmic goiter and the cardiac symptoms. The author points out that the reported case definitely proved that the aortic insufficiency is relative in cases of this nature, a fact which, although suspected by Wiechmann (the observer of several such cases), could not be definitely proved by that observer. In discussing the pathogenesis of this type of aortic insufficiency, the author points out that in former reports he has demonstrated that in cases of this nature there evidently exists a functional insufficiency, probably owing to a dilatation of the ring of the aortic valve. Moreover, he considers the possibility of the simultaneous existence of an insufficiency of the ring of the pulmonary valve. In this connection he calls attention to the frequent appearance of the systolic murmur with its maximum point above the pulmonary artery. He points out further that Wiechmann assumes that a combination of hypertension and cardiac weakness plays a part in the pathogenesis of this insufficiency of the aortic valve. The reported case, however, contradicts the view that hypertension influences the development of the relative aortic insufficiency and there were likewise no noticeable signs of a cardiac weakness during the existence of the insufficiency murmur. Another factor that contradicts the causal role of hypertension in the development of the diastolic murmur is the observation that there were no signs of aortic insufficiency in a number of patients with exophthalmic goiter and hypertension.

### Monatsschrift für Kinderheilkunde, Berlin

63 409 469 (Nov. 2) 1935 Partial Index

Cardiospasm with Severe Emaciation and Reduction of Basal Metabolism in Child Aged 10 Lotte Hotop — p. 409

\*Experiments on Goat's Milk Anemia A. Schöenberg — p. 414

Diodotyroline and Compound Solution of Iodine as Antagonists of Thyroid Secretion B. Bussemaker and A. Pollmann — p. 422

\*Dietetic Measures in Nurslings Who Have Been Operated On. E. von György — p. 424

**Experiments on Goat's Milk Anemia** — Schöenberg describes experiments on rats. In one group he used pure goat's milk, in a second goat's milk with the addition of cellulose, and in a third skimmed goat's milk. Control tests were made with cow's milk. The hemoglobin and erythrocyte values of the animals were verified at seven day intervals and are recorded in curves. The curves indicate that rats fed with goat's milk or with cow's milk show a reduction in the hemoglobin and erythrocyte values after one week and a moderate or severe anemia after two weeks. In the animals fed with goat's milk the erythrocyte values decreased almost parallel with the hemoglobin values, whereas in the rats fed with cow's milk, although the hemoglobin curve showed an abrupt decline, the erythrocyte curve was more horizontal, owing to the fact that the erythrocytes did not diminish much. After a noticeable anemia had been produced in the animals, they were given daily small doses of reduced iron, which resulted in a prompt increase of the hemoglobin and erythrocyte values. In the animals that had been given cellulose in addition to the milk, the dyspepsia and diarrhea, which during the first few days of the dietetic experiment developed in the animals receiving only milk, were prevented, but the anemia developed just the same. The animals that were fed with the skimmed goat's milk developed an anemia similar to that developing in the rats fed with cow's milk, that is, the erythrocyte curve did not show such a sudden decline as when whole goat's milk was given. The feeding of skimmed cow's milk was followed by the opposite result, that is, practically the same blood changes developed as in the case of feeding with whole goat's milk. The weight curves of the animals took about the same course in the feeding with the two types of skimmed milk. The efficacy of liver extracts was tested not by giving the liver extract to the rats but by injecting it into the goat that provided the milk for the experiment. This experiment was to prove whether the efficacy of the liver extract would be lost through animal passage or whether the effective factor would pass into the milk. Since the same goat supplied the milk throughout all these experiments, the fact that the milk which was produced by the animal in the course of the injections of liver extract did not produce anemia in the rats fed with it indicates that an antianemic factor was introduced with the liver preparation and also that this factor did not become ineffective by passage through the animal organism. In some of the rats, the hemoglobin and erythrocyte values increased after feeding with the milk from the goat that received liver injections, at any rate, they never went below the initial values. The addition of iron to the milk rations caused no further change. The author assumes that the quality of the milk and the feeding of the milk producing animal are of considerable importance in the development of goat's milk anemia.

**Postoperative Dietetic Measures in Nurslings** — Von György shows that the dietary measures depend on whether the operation is done under local or under general anesthesia. If the intervention is made under local anesthesia, the meal before the operation is omitted and is replaced by tea. After the operation, nothing but tea is given for six hours, and then follows the so called decomposition type of feeding, that is, feedings are given in such a manner that the full amount is reached at the third meal, the reduction in food being replaced by tea. But not only the quantity but also the quality of food needs some adjustment. Artificially fed nurslings are given only dilutions of milk for two or three days, and after that the preoperative food formula is given again. In operations that are done under general anesthesia, the nursing is obliged to fast for six hours before the intervention, and even tea is not given within the last three hours. Three hours after the operation (except in interventions done on account of invagination or pyloric stenosis) spoonfuls of tea may be given. Intravenous

infusions, transfusions or enemas are given in cases of considerable loss of fluid. If there is no vomiting, the quantity of tea is increased after six hours. Feedings are begun after eighteen or twenty hours, their quantity being at first rather small (10 or 20 Gm) but more frequent (twenty during the day). Gradually the quantity is increased and the number decreased. Nurslings who are fed at the breast may be put to the breast again on the third day. After an operation for invagination the author recommends a small enema or at least the introduction of a catheter to facilitate the expulsion of the air. The instillation of spoonfuls of tea is begun from three to six hours after the operation and small feedings are started twenty-four hours after. In case of operation for pyloric stenosis, small feedings (10 Gm) are begun six hours after the intervention and are repeated every hour. On the succeeding days they are gradually increased and after a week the increase is continued but the number is gradually decreased. The author emphasizes that a careful arrangement of the feeding reduces vomiting, diarrhea, fever and the loss of weight.

### Münchener medizinische Wochenschrift, Munich

82 1785 1818 (Nov 8) 1935 Partial Index

Significance of Paratyphoid C Infections A Klinge and I di Marco.—p 1785

Aspects of Aleukemic Lymphadenosis H Muller —p 1786

Congenital Pancreatic Insufficiency Case H Anke —p 1787

Criticism and Improvement of My Method of Respiration S Jellinek.—p 1790

\*Practical Method for Demonstration of Indican in Urine. M Szajna —p 1795

\*Impairment of Liver by Chimofof Hedwig Dyckerhoff —p 1802

**Demonstration of Indican in Urine**—Szajna demonstrates the presence of indican in the urine in the following manner. To 10 cc. of urine he adds the same quantity of concentrated, chemically pure hydrochloric acid. Then he adds slowly from 2 to 3 cc of a 3 per cent solution of hydrogen peroxide in such a manner that the two fluids remain distinctly separated. Then the test tube is subjected to careful swinging movements so that the adjoining layers of the fluids become mixed to a depth of from 2 to 3 cm. In the presence of indican, this mixed zone assumes a blue coloration. The principle of this test is essentially the same as that of the other tests that are based on the change by oxidation of indoxyl into indigo blue. However, this test is simpler and permits a fairly exact determination of the indican content of the urine. In case of a normal indican content, the mixed zone shows only a weak bluish coloration, while in case of an abnormal content the coloration is more intense, ranging to a deep blue and almost black. The largest amounts of indican are detected in patients with typhoid, mechanical ileus habitual constipation and gastrointestinal dyspepsia.

**Impairment of Liver by Chimofof**—Dyckerhoff describes the necropsy of a patient who had developed jaundice in the course of treatment with chimofof and died. Histologic studies on the liver disclosed changes like those observable in subacute yellow atrophy in cases of poisoning with arsenic, chloroform or mushrooms. Some of the other organs likewise showed changes that occur in these forms of intoxication such as fatty degeneration of the kidneys and of the musculature of the heart. The observations in this case and the fact that other observers have reported cases of jaundice and of acute yellow atrophy of the liver following treatment with chimofof induced the author to investigate this problem in animal experiments. She found that whereas rabbits weighing between 1,500 and 2,000 Gm tolerated 5 cc. of the preparation without any impairment, even if more than twenty injections were given, a single dose of 10 cc. was often followed by a rapid loss of weight, and several such doses usually resulted in death. The anatomic examination of the animals that died disclosed changes similar to those detected in the course of the aforementioned necropsy. The author points out that the results of animal experiments cannot be directly applied to human subjects particularly since the doses in the animal experiments were much too high. Moreover, it is possible that in the reported case the impairment of the liver by chimofof was due to the fact that the resistance of the liver was reduced. To gain more insight into this problem, the author made a second series of tests. She gave injections of chimofof to animals in which the gly-

cogen content of the liver had been reduced by feeding with short rations. She found that the hepatic changes were much more severe in these animals than in the first group of animals. She emphasizes that in the course of treatment with chimofof the bilirubin content should be kept under careful observation so that severe changes of the liver may be avoided.

### Wiener klinische Wochenschrift, Vienna

48: 1375 1406 (Nov 8) 1935 Partial Index

Experimental Studies on Anjeszky's Disease. F Gerlach and F Schweinburg —p 1379

\*Significance of Epithelial Inclusions for Female Gonorrhea. M Spitzer —p 1382

Treatment of Bronchial Asthma by Air Ionization. I E Landsmann —p 1384

Complement Fixation Reaction in Inguinal Lymphogranuloma H Hecht —p 1389

Intermittent Claudication E Zak —p 1390

**Epithelial Inclusions in Female Gonorrhea**—Spitzer points out that in the course of microscopic studies on the urethral secretions of women with gonorrhea he observed circular formations in the protoplasm of the epithelial cells, which measure from 0.5 to 4 microns and, as a rule, lie close to the nucleus, so that sometimes they even indent it. They occur in different sizes in the same cell. Only rarely do these formations concur with gonococci and, if this does happen, the gonococci disappear soon after. The amount of secretion is usually scant in these cases. The formations are found in the typical intracellular position for a comparatively long period. In uncomplicated cases of female gonorrhea, they may be present up to nine months. After that time the smaller forms (up to 2 microns) are occasionally found within the cellular nucleus and the larger forms are distributed between the cells. After that they become smaller and disappear. With methylene blue, the epithelial inclusions assume a blue color. Other investigators have observed inclusion bodies in gonorrhea. The author considers it important that the epithelial inclusion bodies become less numerous and smaller, following renewed treatment. In complicated cases of gonorrhea the epithelial inclusion bodies persist for years, and it is possible to detect the gonorrheal nature of tumors of the adnexa by finding the epithelial inclusion bodies. In these cases the bodies persist in their primary stage (in the protoplasm of the cell), but they appear in their so-called terminal stage (chiefly extracellular) after the onset of effective treatment. After discussing the behavior of the inclusion bodies in case of specific vaccination of gonorrhea, the author points out that they appear also in cases in which the anamnesis discloses no gonorrheal infection but in which an infection had nevertheless taken place and had caused little or no symptoms. In this connection he emphasizes that the spontaneous cure of female gonorrhea is often underestimated.

### Zentralblatt für Gynäkologie, Leipzig

60: 2593-2640 (Nov 2) 1935

Course and Treatment of Streptococcal Peritonitis Originating in Female Genitalia W Schultz —p 2594

\*Salt Deficient Diet and Pregnancy G Lambert.—p 2598

\*Short and Painless Period of Dilatation as Result of Salt Free Diet. J Kárpáti —p 2601

Simple Device for Alleviation of Pains Following Abdominal Operations. J Novak —p 2605

Problem of Spinal Anesthesia R Mandelbaum —p 2606

Uniovular Monamniotic Twin Pregnancy T Nemcskay —p 2607

Binovular Twins with Unusually Great Difference in Weight (1300 and 3300 Gm) Á V Sorényházy —p 2611

**Salt-Deficient Diet and Pregnancy**—Lambert shows that there are widely different opinions regarding the chloride content of the blood of pregnant women. The surprising observations of Reeb and Israel on the influence of a salt-deficient diet on the labor pains and the duration of the delivery induced him to study the influence of this diet in women at the end of pregnancy. He determined the chloride content of the blood, according to the method of Rusznayck, in pregnant women who received an ordinary diet and in those who received a salt-deficient diet. Summarizing his results he states that in ten women who received a salt-deficient diet he observed no influence on the duration of labor or on the uterine contractions. The period of dilatation lasted in all the primiparas (six cases) more than seven hours and in the other women more than four hours.

Severe backache developed in some of the women. The salt-deficient diet caused no acceleration of the process of labor in the three women with premature rupture of the bag of waters. A quieting influence on the psyche of nervous women was likewise lacking following the salt-deficient diet.

**Short and Painless Dilatation as Result of Salt-Free Diet**—Karpáti observed that women who because of nephropathy had received a salt-free diet at the end of their pregnancy had an unusually easy delivery. He assumed a causal connection between the salt-free diet and the easy delivery and was confirmed in this belief when he read that two other physicians had made the same observation. However, when he subjected a number of pregnant women, regardless of their disorder, to a salt-free diet in the last few weeks preceding their delivery, he found that the delivery was easier only in those women in whom the diet had had a clinically demonstrable success (reduction in blood pressure and improvement in the albuminuria, pyuria, edema and diuresis). The more rapid and the more thorough the improvement in the clinical symptoms following the salt-free diet, the more noticeable was the shortening of the period of dilatation and its painlessness. In primiparas the period of dilatation was often reduced to from three to four hours and in multiparas to from one to one and one-half hours. The reduction in pain was likewise considerable. However, in the women who had shown no clinical improvement following the salt-free diet (mostly those with severe nephropathy) the delivery was not made easier. The author points out that the other observers did not report these connections, probably because their observations were made chiefly on healthy pregnant women. He discusses the mode of action of the salt-free diet and concludes that regardless of its action mechanism it cannot be denied that the salt-free diet decreases the duration as well as the pain of the period of dilatation.

#### 50 2641 2704 (Nov. 9) 1935 Partial Index

Determination of Term of Ovulation and Conception H. Knaus — p. 2642

After Treatment of Women with Hereditary Defects Who Have Been Sterilized H. Effenberger — p. 2662

Perforated Appendicitis at End of Pregnancy. Two Cases E. Wolff — p. 2667

\*Treatment of Gynecologic Hemorrhages with Congo Red A. P. Nikolajew and L. I. Gurewitsch — p. 2672

**Treatment of Gynecologic Hemorrhages with Congo Red**—Nikolajew and Gurewitsch point out that the hemostatic action of congo red was first discovered by Wedekind in the course of studies on the reticulo-endothelial system in pulmonary tuberculosis. They decided to investigate whether congo red influences gynecologic hemorrhages. They administered congo red in the form of from one to three intravenous injections of from 10 to 12 cc. of a 1 per cent aqueous solution. The injections were painless. A tabular report of the thirty-six cases in which the treatment was employed indicates that congo red has a decided hemostatic effect and that this hemostatic action is evident only in hemorrhages of an inflammatory nature. The authors describe studies on the action mechanism of congo red which revealed that congo red accelerates the coagulation of the blood, increases the number of thrombocytes, compresses the capillary lumen by the adherence of color granules to the perithelial cells and finally, by the partial destruction of the erythrocytes and the resulting formation of hemosiderin in the cells of the reticulo-endothelial system, particularly the perithelial cells, stimulates the further absorption of congo red.

#### Vestnik Khirurgii, Leningrad

30:1 365 (Nos. 110-111) 1935 Partial Index

Postoperative Massive Collapse of Lung M. S. Shulman — p. 9

Thrombosis and Embolism as Postoperative Complications T. N. Chernovitsova — p. 21

\*Clinical Data Concerning Blood Conservation A. N. Filatov and M. E. Depp — p. 36

Research in Surgical Treatment of Cancer of Breast S. A. Kholdin — p. 68

Diagnosis and Treatment of Gastroduodenal Ulceration in Relation to Occupation and to Living Conditions G. N. Abramyan and E. M. Zabusova — p. 95

**Conserved Blood for Transfusion.**—Filatov and Depp state that the Leningrad Institute for Blood Transfusion began the study of the problem of conserving blood in 1932. In all

1,529 flasks of a capacity of from 200 to 300 cc. were conserved. Of these, 526 flasks were used for transfusion in patients of the institute and the First Surgical Clinic, 659 flasks were sent to various cities, 123 were used in preparing serums and 221 were discarded because of hemolysis, contamination and the presence of clots. In the first three days, 50.3 per cent of the flasks were utilized. Blood preserved in physiologic solution of sodium chloride-citrate could be used for from ten to twelve days. Blood preserved in a solution of dextrose-citrate could be used for a longer period. Clinical results show that both preservatives give a high percentage of reactions. Transfusion of defibrinated blood gave the smallest incidence of reactions. On the basis of their experience with 526 transfusions the authors conclude that the substitution effect as well as the hemostatic and stimulating effects of conserved blood are little less than those of fresh citrated blood. Its disadvantages are to be seen in a much higher incidence of reactions. The authors record one fatality and seven instances of grave complications.

**Gastroduodenal Ulceration**—Abramyan and Zabusova analyzed 2,000 cases of gastroduodenal ulceration in which treatment was administered in the surgical service of the Hospital for Railway Workers in Gomel. The authors emphasize the role of faulty nutrition in the etiology of the disease. Analysis of incidence of the ulcerative disease among the railroad workers showed that occupations which create unfavorable conditions of nutrition give the highest incidence. Surgical intervention was necessary in only 535 of the total of 2,000 cases. Pyloroplasty was performed in twenty-five with good immediate but poor late results. Fourteen of these patients returned in from two to five years with the original complaints. Gastro-enterostomy was performed in 222 cases. The mortality in this group was 2.23 per cent. A follow-up study, of ten years revealed 35 per cent of good results, 26 per cent of satisfactory results and 36 per cent of poor results. Partial gastric resection of the first or second Billroth type was performed in 231 cases. Mortality in this group was 3.5 per cent. A follow-up study showed ten years later, 92 per cent of good results and 3 per cent of satisfactory results. The authors conclude that prolonged fasting intervals and irregular eating necessitated by certain occupations play an important part in the pathogenesis of the gastroduodenal ulceration. All uncomplicated cases can be cured without surgical intervention. The latter is indicated in complicated cases only, such as callous penetrating or eroding ulcers. Such cases require an extensive resection which the authors consider the operative method of choice. They feel that all other operative methods, such as pyloroplasty, gastro-enterostomy or ulcer excision, should not be practiced.

#### Norsk Magasin for Lægevidenskapen, Oslo

98:1041 1152 (Oct.) 1935

Weil's Disease K. Motzfeldt — p. 1041

Sanocrysin in Pulmonary Tuberculosis K. Motzfeldt — p. 1046

Infection with Bacillus Paratyphosus A Complicated with Spondylitis E. Waaler — p. 1051

Genococcic Peritonitis in Girl Aged Nine E. Waaler — p. 1056

Werthof's Disease and Hypoplasia of Spleen K. Kristiansen — p. 1060

\*Ureterocele I. Cystic Dilatation of Vesical End of Ureter II Ureter Prolapse in Hernia G. Røvig — p. 1068

Elephantiasis Particularly Elephantiasis Nostris Casuistic Contribution to Doctrine of Its Etiology and Pathogenesis A. Kveim — p. 1093

**Ureterocele**—Røvig describes a case of bilateral ureterocele and bilateral double ureter, complicated with urolithiasis, dilatation of the ureter and infection in the urinary tract, in a woman aged 48, with history of symptoms from the urinary tract for about twenty years. Endovesical operation of the right ureterocele with electrocoagulation, followed a year later by similar treatment of the left ureterocele, gave good results. A case is also reported of prolapse of the ureter in a crural hernia, unfortunately the author says, designated as ureterocele in a woman aged 30. The condition is rare and in most of the reported cases lesion of the prolapsed ureter was inadvertently caused from disregard of the first principle of hernial surgery, i. e. careful and anatomically proper isolation of the hernial sac or supposed hernial sac.

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## THE VALUE OF ATROPINE AND BELLADONNA IN STOMACH DISORDERS

A SUMMARY OF THE LABORATORY AND  
CLINICAL OBSERVATIONS

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NEW YORK

Atropine and belladonna are frequently prescribed for stomachs with hyperacidity, hypersecretion, hyperperistalsis or spasm. Sixteen years ago I<sup>1</sup> presented the proposition that the reliance of physicians on these drugs is not justified, the main reasons being that in the doses commonly employed they cannot produce the desired effects and that, in dosage large enough to produce stomach effects, the other actions are too undesirable to permit repeated administrations. These conclusions have been questioned by many able clinicians.

The preparations of belladonna commonly employed are the tincture and the extract. Their alkaloids have the action of atropine, a variable fraction of hyoscyamine possibly making the total alkaloids somewhat stronger than atropine. A commonly prescribed dose of the tincture is 0.65 cc (10 minims), and this is equivalent to 16 mg (one-fourth grain) of the extract or 0.25 mg ( $\frac{1}{260}$  grain) of atropine in the form of sulfate. But of the latter, the minimum single dose employed in most human experiments is four times this amount, or 1 mg ( $\frac{1}{65}$  grain), equivalent to 27 cc (42 minims) of the tincture and to 67 mg (over 1 grain) of the extract.

As it is a general belief that atropine acts solely by abolishing vagus influence, thus freeing the sympathetic to act unopposed, attention may be called to the following established generalities (Lim, Ivy and McCarthy,<sup>2a</sup> McSwiney and Wadge,<sup>2</sup> Latarjet,<sup>3</sup> Carlson,<sup>4</sup> Thomas,<sup>5</sup> Alvarez,<sup>6</sup> Babkin<sup>7</sup> and others):

1 After the vagus and splanchnic nerves have been severed, the stomach continues to function with little if any dilatation, therefore its tone and rhythmic motility are intrinsic, and the extrinsic nerves are only regulatory to give more delicate control.

2 The vagi and the splanchnic nerves are for the most part not motor antagonists. The general effect of vagus stimulation is tonic, while that of splanchnic stimulation is tonic to the pylorus and relaxing to the stomach wall. But stimulation of either may result in increased tone when the stomach (pylorus, body or cardia) is hypotonic and in decreased tone when the stomach is hypertonic.

3 The vagi and sympathetic nerves supplying the stomach are not in continuous activity as a balanced mechanism, such as occurs in the pupil of the eye, therefore the abolition of one set does not necessarily result in overactivity of the other set.

4 Atropine may act on all the nervous structures, but its chief action is to render vagus stimuli ineffective. Therefore cutting the vagi represents in large measure the extreme effect of atropine.

### EFFECTS ON SECRETION

In the secretion of gastric juice there are at least three phases: the psychic, the chemical and the intestinal.

*The Psychic Phase*—The secretion of the psychic, or appetite, juice is mediated through the vagus nerves and in laboratory animals may be abolished by atropine. In human beings Rehfuess<sup>8</sup> found that 13 mg ( $\frac{1}{50}$  grain) of atropine sulfate hypodermically reduced this secretion but did not abolish it. Through this and other actions atropine lessens appetite and hunger. The gastric phase of secretion is given its start by the chemical substances formed from food by the psychic juice, therefore if the psychic juice is cut down by atropine it is possible that the chemical juice will be more slowly developed.

*The Intestinal Phase*—This phase of gastric secretion, according to Ivy,<sup>9</sup> is mediated by the vagus and in laboratory animals is diminished or abolished by large doses of atropine. I have found no studies of it in human beings.

*The Chemical Phase of Gastric Secretion*—In animals, by severing the vagi in the thorax, Hartzell<sup>10</sup> obtained a marked reduction in the free and total acid, but not their abolition, with vagi severed in the abdomen the free acid was occasionally as high as before. With 9 mg (one-seventh grain) of atropine sulfate intravenously in a cat weighing 4.4 Kg, Baxter<sup>11</sup> of Babkin's laboratory records that the amount of secretion of both acid and mucus was diminished by half but that free acid was present throughout the experiment. If human beings react like a cat, this dosage would be at the rate of 143 mg ( $2\frac{1}{4}$  grams) of atropine sulfate for a man weighing

Read before the Section on Gastro-Enterology and Proctology at the Eighty-Sixth Annual Session of the American Medical Association Atlantic City, N. J., June 12, 1935.

- 1 Bastedo, W. A. Tr. Am. Gastro-Enterol. A. 1919. Am. J. M. Sc. 159: 53 (Jan.) 1920.
- 2a Lim, R. K. S., McCarthy, J. E. and Ivy, A. C. Am. J. Physiol. 74: 616 (Nov.) 1925.
- 2 McSwiney, B. A. and Wadge, W. J. J. Physiol. 65: 350 (Aug.) 1928.
- 3 Latarjet, A. Bull. Acad. de med. Paris 87: 681 (June 20) 1922.
- 4 Carlson, A. J. The Control of Hunger in Health and Disease. Chicago: University of Chicago Press, 1916.
- 5 Thomas, J. E. Rev. Gastroenterol. 2: 32 (March) 1935.
- 6 Alvarez, W. C., Hosoi, K., Overgard, A. and Ascanio, H. Am. J. Physiol. 90: 631 (Nov.) 1929.
- 7 Babkin, B. P. Tr. Am. Gastro-Enterol. A. 1933.
- 8 Rehfuess, M. E. Tr. Am. Gastro-Enterol. A. 1918.
- 9 Ivy, A. C. Am. J. Digest. Dis. & Nutrition 1: 845 (Feb.) 1935.
- 10 Hartzell, J. B. Am. J. Physiol. 91: 161 (Dec.) 1929.
- 11 Baxter, C. G. Am. J. Digest. Dis. & Nutrition 1: 36 (March) 1934.

70 Kg In cats Bolton and Goodhart<sup>12</sup> found that it required from one-half to three-fourths grain (32 to 48 mg) by hypodermic injection to check the secretion entirely (8 to 12 grains, or 520 to 780 mg, for a man). In dogs, the gastric secretion that normally results from mechanical distention or the application of local stimulants, such as beef extract, was found by Lim, Ivy and McCarthy to be inhibited by 1 mg of atropine sulfate by hypodermic injection. This action was not due wholly to the abolition of vagus influence, for under atropine a stomach pouch deprived of vagal fibers still responded to mechanical and chemical stimuli. Shapiro and Berg<sup>13</sup> report that after subtotal gastrectomy in dogs with both vagi severed atropine still acts to reduce secretion. Thus atropine affects secretion by counteracting the activities of other structures as well as those of the vagi.

In dogs with Pavlov pouches, Keeton, Luckhardt and Koch<sup>14</sup> observed that it took very large doses of atropine to abolish secretion and, further, that the amount of secretion dropped from 50 to 80 per cent before the percentage content of hydrochloric acid was lowered. In spite of such large doses of atropine, the secretion reappeared after histamine. In patients, after the gastric juice had returned to normal following a hypodermic injection of histamine, Pollard<sup>15</sup> gave histamine and atropine together in doses of 0.7 mg ( $\frac{1}{90}$  grain) of histamine and 1.4 mg ( $\frac{1}{45}$  grain) of atropine for 70 Kg body weight. The acidities after atropine were higher than they had been with histamine alone, but the volume of secretion was reduced. He concluded that the acid percentage rises because atropine only slightly inhibits the total output of acid, while it reduces to a greater extent the volume of the whole secretion. All the patients had dryness of the mouth and blurred vision. Klumpp and Bowie<sup>16</sup> obtained similar results and concluded that atropine tends to prolong the high level of acidity that results from histamine. Porter<sup>17</sup> found the volume decreased without change in acidity.

Keefer and Bloomfield<sup>18</sup> gave patients 2 mg ( $\frac{1}{33}$  grain) of atropine sulfate by hypodermic injection and found the total volume of secretion reduced out of proportion to the acid. But even after this dose, which resulted in dry mouth, blurred vision, tachycardia and cerebral symptoms, a test breakfast of 50 cc of 7 per cent alcohol produced the usual secretion of gastric juice. Kalk and Siebert determined that after atropine the majority showed an increased acidity. In Crohn's<sup>19</sup> continuous secretion cases, 13 mg ( $\frac{1}{60}$  grain) by mouth proved useless, but when given hypodermically it stopped the interdigestive secretion.

In my clinic,<sup>1</sup> we administered 1 and 1.3 cc (15 and 20 minims) of the tincture of belladonna with the test breakfast or a few minutes before it, to some twenty patients with gastric hyperacidity. At the one hour extraction there was no significant change either in the acidity or in the amount of secretion. But Roberts<sup>20</sup> reports that the acidity falls decidedly between one and

one-quarter and one and one-half hours and attributes this to the regurgitation of bile through a relaxed pylorus. His doses were very small, only 10 or 15 minims (0.6 or 1 cc) of the tincture or  $\frac{1}{100}$  grain (0.6 mg) of atropine sulfate shortly before the meal. Bolton, and Lockwood and Chamberlin<sup>21</sup> also mention the early appearance of bile in the gastric contents.

In ulcer cases Crohn found that 1 mg by hypodermic injection had little effect on the test breakfast return, except for a rise in acidity toward the end of the digestive period, and that tincture of belladonna, 1 cc (15 minims), given four times a day by mouth till untoward actions appeared, had no effect at all. In ulcer cases, with 13 mg ( $\frac{1}{60}$  grain) by hypodermic injection, Lockwood and Chamberlin obtained reduction in acidity, yet, using doses compatible with safety, "found it impossible to demonstrate the marked action seen in lower animals." They noted that the action of mouth doses was not local and was delayed until absorption took place. In one of their ulcer cases in which 90 cc of cream was given every two hours they gave atropine sulfate 13 mg ( $\frac{1}{60}$  grain) by hypodermic injection at each of two successive feedings and noted a distinct reduction in acidity, but the effect on the stomach was short lived for, after the next two hour feeding, which was given without atropine, the acidity rose to 77, though the throat was still dry and the pupils were dilated. Danielopolu<sup>22</sup> and Carmol, and Keefer and Bloomfield also noted the brevity of the action in patients, and Carlson, Boyd and Percy<sup>23</sup> in animals, the latter observing that the heart was affected more readily than the stomach. Dale<sup>24</sup> finds atropine relatively ineffective in hindering the action of the vagus, so far as the alimentary tract is concerned.

Palmer<sup>25</sup> gave an ulcer patient 1 mg of atropine sulfate by mouth every three hours and noted that as the day went on the acid curves became higher and were the same as without atropine. In this patient there were no untoward effects from the atropine. In another patient there was a considerable drop in acidity under atropine, but there were visual disturbances and dry mouth. A patient with prepyloric ulcer took tincture of belladonna, 10 minims (0.6 cc.) four times a day for four days and 15 minims (1 cc.) three times on the day of the experiment. In spite of this, the evening free acid was 54 and the total acidity 92. The mouth was dry. The same evening pain was produced by the introduction of 0.5 per cent hydrochloric acid and, in addition to all the belladonna, atropine sulfate,  $\frac{1}{45}$  grain (0.9 mg), was given by hypodermic injection and yet the pain was not relieved till the stomach was emptied. He concludes that the stomach is not influenced unless the other actions of the drug are manifested, and that the physiologic effects "are so disagreeable that the continuous administration of effective doses of atropine is scarcely possible."

Attention might be called to the finding of Vineberg,<sup>26</sup> Babkin and others that weak vagus stimulation induces a mucoid secretion only, and that strong vagus stimulation, besides gastric juice, produces a secretion

12 Bolton C. and Goodhart G. W. *J. Physiol.* 73: 115 (Oct.) 1931  
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14 Keeton R. W., Koch F. C. and Luckhardt, A. B. *Am. J. Physiol.* 51: 469 (April) 1920  
15 Pollard W. S. *J. Clin. Investigation* 9: 319 (Oct.) 1930  
16 Klumpp T. G. and Bowie M. A. *J. Clin. Investigation* 12: 1 (Jan.) 1933  
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18 Keefer C. S. and Bloomfield A. L. The Effect of Atropine on Gastric Function in Man. *Arch. Int. Med.* 38: 303 (Sept.) 1926  
19 Crohn B. B. *Am. J. M. Sc.* 155: 801 (June) 1918  
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21 Lockwood B. C. and Chamberlin H. G. The Effect of Atropine on Gastric Function as Measured by Fractional Analysis. *Arch. Int. Med.* 30: 806 (Dec.) 1922  
22 Danielopolu D. Die viscerographische Methode. Berlin, S. Karger 1930  
23 Carlson A. J., Boyd T. E. and Percy, J. F. *Am. J. Physiol.* 61: 14 (June) 1922  
24 Dale H. H. quoted by Loewi, Otto. Harvey Lectures 1932 1933  
25 Palmer W. L. The Mechanism of Pain in Gastric and in Duodenal Ulcer. *Arch. Int. Med.* 39: 109 (Jan.) 1927. *Tr. Am. Gastroenterol. A.* 35: 123 1932  
26 Vineberg A. M. *Am. J. Physiol.* 97: 363 (Feb.) 1931



of abundant mucin, and, in addition, that atropine in amounts large enough to depress the acid also lowers the secretion of mucus, certainly a disadvantage in an ulcer case. Whitlow,<sup>27</sup> in Ivy's laboratory, has demonstrated that mucin lessens the irritation from hydrochloric acid.

#### MOTOR EFFECTS

**Tone and Motility**—With atropine sulfate McCrea and Macdonald<sup>28</sup> found that from 0.1 to 0.15 mg ( $\frac{1}{650}$  to  $\frac{1}{430}$  grain) per kilogram, intravenously in a cat, reduced the intragastric pressure, arrested the movements of the stomach, and eliminated both vagus and splanchnic control. Carlson and Litt<sup>29</sup> found that atropine abolished both vagus and splanchnic effects on the cardia. Smith<sup>30</sup> immersed strips from the different muscular coats of the stomach wall and of the pyloric and cardiac sphincters of rabbits, cats and dogs in solutions of atropine sulfate, from 1:100,000 to 1:1,000,000, and invariably obtained relaxation. In the stomachs of dogs isolated after hypodermic doses of 1 mg per kilogram, Zunz and Tysebaert<sup>31</sup> observed weakening of the contractions and lowered tone. In dogs, Ginsburg and Tumpowsky<sup>32</sup> found that from 0.8 to 1.5 mg inhibited the hunger contractions, whether the vagi were cut or not. Under "Effects on Secretion," other evidence was presented that atropine may possibly nullify not only vagus impulses but also both sympathetic impulses and those generated in the stomach wall itself. Nevertheless, rendering vagus stimulation ineffective is the outstanding function of the drug, and this inhibiting action is peripheral.

Tone and rhythmic motion are intrinsic properties of the stomach wall, but when the stomach is hypotonic vagus stimulation increases tone and when the stomach is hypertonic vagus stimulation lowers tone. This applies to the pylorus, the body of the stomach and the cardia. It suggests that in the presence of either the hypertonic or the hypotonic stomach the prevention of this regulating vagus influence by atropine would be undesirable. In animals, Thomas finds that normally the filling of the duodenum lowers the tonus of the antrum and checks hyperperistalsis—another reflex that it would be undesirable to counteract by atropine. However, with roentgenograms, in those patients with hypertonus and hyperperistalsis but not in others, Lasch<sup>33</sup> obtained a definite lowering of tone and peristalsis from 1 to 1.5 mg of atropine sulfate intravenously. Hughson<sup>34</sup> observed that hyperperistalsis resulting reflexly from peritoneal irritation was prevented by cutting the vagi, and others have prevented such reflex activity by atropine.

With atropine administered intravenously to man, Danielopolu and Carniol found that small doses, 0.05 mg ( $\frac{1}{2000}$  grain), caused a decided increase in tone and in the amplitude of contraction, while doses of 0.25 mg ( $\frac{1}{400}$  grain) diminished the tone and weakened the contractions. Sometimes the latter action required much larger doses. A similar vagus (central) stimulation by small doses is seen in its action on the heart. Small doses of atropine or belladonna may therefore be tonic rather than inhibitory.

**Emptying Time**—The emptying time of the stomach after vagotomy and after atropine has been noted by many observers. In man, with doses of atropine up to 2 mg by hypodermic injection, test breakfast experiments have mostly shown no constant effects on the evacuation time (Lockwood and Chamberlin, Crohn, Keefer and Bloomfield), while most x-ray reports indicate delay. Retarded evacuation is generally attributed to a loss of tone and contractility in the stomach wall, hastened evacuation is considered due either to relaxation of the pylorus or to diminished secretion. But three investigators independently, Klee,<sup>35</sup> Otvos<sup>36</sup> and Stranz,<sup>37</sup> attribute atropine retardation in ulcer to the production of pyloric spasm by the atropine.

**Spasm**—In the body of the stomach, spasm at the site of an ulcer may be a vagus effect. Following section of the splanchnic nerves, de Takats<sup>38</sup> produced stomach spasm that was relieved by atropine, and on distending the colon with air or irritating the proximal colon Smith and Miller<sup>39</sup> produced spasm of the antrum, which was checked by atropine. However, spasm of the stomach wall is not always a vagus effect. In cats with both vagi severed, Borchers<sup>40</sup> observed that irritation produced spasm the same as in animals with vagi intact, and in spasm accompanying gastric cancer, Marcu and Savulescu<sup>41</sup> obtained no effect from atropine.

**Pylorospasm**—Gaskell<sup>42</sup> and other students of the sympathetic nervous system believed pylorospasm to be purely a splanchnic phenomenon, and Carlson and Litt observed it as a result of splanchnic stimulation and after epinephrine, the effects of which are identical with those of sympathetic stimulation. But Thomas finds that epinephrine, and others that splanchnic stimulation, increases tone when the sphincter is relaxed and decreases tone when the sphincter is hypertonic. Ivy found that the sphincter usually contracts on noxious stimulation of the gallbladder, appendix or colon, and that this action is motivated through the splanchnic nerves. But he ascertained that pylorospasm could occur in dogs with the splanchnic nerves severed. In dogs, Hughson found that peritoneal irritation would produce pylorospasm, but not after the vagi were cut. Thomas determined that the normal reflex when food passes into the duodenum does not affect pyloric tonus, nevertheless, after the abolition of the vagi, the normal filling of the duodenal bulb increases the tone of the sphincter. Thus, through this reflex, pyloric spasm might be promoted by atropine. Smith and Miller demonstrated that pylorospasm might be due to irritation of the local nerve plexus. Three investigators independently, Klee, Otvos and Stranz, find that, in deep ulcer of the pylorus and duodenum, 1 mg ( $\frac{1}{650}$  grain) of atropine sulfate by hypodermic injection produces or increases pylorospasm.

As to emotional pylorospasm little has been said. But I have encountered some clinical examples. In a young woman with a two day history of vomiting our roentgenograms showed pylorospasm. At eighteen hours, in spite of several hypodermic injections of

<sup>27</sup> Whitlow, J. E. Master's thesis, Loyola University, quoted by Fogelson.

<sup>28</sup> McCrea, E. D. and Macdonald, A. D. Quart. J. Exper. Physiol. 19: 161 (Dec.) 1928.

<sup>29</sup> Carlson, A. J., and Litt, S. Studies on the Visceral Nervous System. Arch. Int. Med. 33: 281 (March) 1924.

<sup>30</sup> Smith, M. I. Am. J. Physiol. 46: 232 (June) 1918.

<sup>31</sup> Zunz, E. and Tysebaert, J. J. Pharmacol. & Exper. Therap. 32: 325 (June) 1916.

<sup>32</sup> Ginsburg, Harry and Tumpowsky, Isidor. Contributions to the Physiology of the Stomach. Arch. Int. Med. 22: 553 (Nov.) 1918.

<sup>33</sup> Lasch, C. H. Klin. Wchnschr. 17: 840 (April 22) 1922.

<sup>34</sup> Hughson, Walter. The Effect of Vagus Neurotomy on the Pyloric Sphincter, J. A. M. A. 88: 1073 (April 2) 1927.

<sup>35</sup> Klee, P. Deutsches Arch. f. klin. Med. 133: 265 (Sept.) 1920.

<sup>36</sup> Otvos, W. Deutsches Arch. f. klin. Med. 136: 58 (April) 1921.

<sup>37</sup> Stranz, J. Med. Klinik, 22: 59 (Jan. 8) 1926.

<sup>38</sup> de Takats, Geza and Fenn, G. K. Ann. Int. Med. 7: 422 (Oct.) 1913.

<sup>39</sup> Smith, F. M. and Miller, G. H. Am. J. Physiol. 90: 518 (Oct.) 1929.

<sup>40</sup> Borchers, E. Deutsche Ztschr. f. Chir. 162: 19 (April) 1921.

<sup>41</sup> Marcu, I., and Savulescu, A. Compt. rend. Soc. de biol. 98: 243 (Jan. 27) 1928.

<sup>42</sup> Gaskell, W. H. The Involuntary Nervous System, New York: Longmans Green & Co. 1916.



atropine sulfate, 0.65 mg ( $\frac{1}{100}$  grain), none of the barium had passed the pylorus. Yet half an hour later, after she had received a letter from her fiancé, with whom she had quarreled, the pylorus was found relaxed.

Therefore pylorospasm may be a splanchnic effect, a vagus effect or a psychic effect the motivation of which has not been determined, or it may be due to local irritation. Smith and Miller say that "in contradistinction to pyloric spasm, spasm of the antrum is due chiefly to vagus influence," thus implying that pylorospasm is not a vagus phenomenon. In any event, pylorospasm is usually not due to vagus activity.

The roentgenologists have employed atropine extensively to overcome spasm, but many have abandoned its use, stating that the effect on spasm is at best problematic. Without any drugs, spasm disappears in a few minutes or an hour or after several hours, or it may disappear and reappear intermittently. Therefore in any given stomach the relation of the muscular relaxation to any drug administered is an uncertain one. As expressed by Moore, many roentgenologists believe that apprehension concerning the examination is a common cause of pylorospasm and that its frequent absence at the second examination is due solely to the patient's loss of apprehension and not to atropine or other drugs.

Among roentgenologists, Barclay and a number of others report that atropine sometimes causes prompt relaxation of spasm, while Reizenstein and Frei find that it never relaxes spasm and sometimes increases it. With 1.5 mg ( $\frac{1}{40}$  grain) of atropine sulfate by hypodermic injection, Fray<sup>43</sup> obtained relaxation in none of five cardiopspasms, in three of ten spasms in the body of the stomach and in five of eighteen pylorospasms. All experienced dry mouth and usually an increase of from twenty to thirty beats in the heart rate. With atropine sulfate by hypodermic injection, 0.65 mg ( $\frac{1}{100}$  grain) every fifteen minutes till the patient complained of dry mouth, Beams<sup>44</sup> was successful in two out of five cardiopspasms, two of sixteen gastropspasms and two of twenty pylorospasms.

I omit consideration of the use of atropine in the hypertrophic pyloric stenosis of infants, in which enormous proportionate doses have been employed with and without success.

#### TROPHIC EFFECTS

That the vagi are the trophic nerves of the gastric glands, and that the sympathetic are not so, is the general belief. Following vagal resection, Finzi and also Keppich obtained atrophic ulceration. Aschoff<sup>45</sup> reports that in rabbits vagus section exercised a marked restraining influence on the healing of ulcer and that in rabbits' stomachs all artificially produced defects showed a poorer healing tendency under atropine treatment. However, trophic lesions have resulted from other than vagus abolition. Several experimenters have failed to find ulceration after vagotomy, and Alvarez, Hosoi and others found gastric ulcer not only in six of thirty-one rabbits with both vagi severed but also in six of eleven with both major splanchnic nerves cut and in three of nineteen with combined vagotomy and splanchnotomy. From a study of the subject Best and Orator<sup>46</sup> conclude that "the development of chronicity in peptic ulcer depends on some trophic element,

a lesion of the central nervous system, of the vagi, of the sympathetics, or of Auerbach's or Meissner's plexus."

#### BY-EFFECTS

One need merely enumerate the by-effects encountered in patients when, in the hope that atropine or belladonna may be effective, the largest possible doses are administered. The saliva and perspiration are checked. The mucous membranes all over the body are dried up, the drug being used therapeutically to dry the mucous secretions of bronchi, throat and nose. In examinations of the rectum, sigmoid and vagina after belladonna medication I have noted how desiccated these organs appear. Atropine dilates the pupils, paralyzes accommodation and increases eyeball tension. It may lower the tone and the reactions of the gall bladder, the common bile duct and the ureters. Small doses slow the heart, the larger clinical doses make a tachycardia. It may produce a delirifacient effect on the brain.

#### COMMENT

The action of atropine on the stomach is peripheral, but it is obtained only after the absorption of the drug. Maximum doses for man may be considered those that just produce undesirable by-effects.

*Secretory Effects*—With the enormous doses possible in experimental animals, atropine may reduce and even abolish the secretion of gastric juice. In man the maximal possible doses tend to reduce the psychic phase and possibly the intestinal phase of gastric secretion and thereby to reduce the total secretion. They also tend to reduce the continuous interdigestive secretion for two or three hours, but not long enough to make atropine a satisfactory night dose in ulcer.

In the chemical phase, doses large enough to cause toxic reactions may bring about a distinct reduction in the amount of secretion, though this is by no means a constant effect. The reduction in quantity may be accompanied by a reduction in the acid titer, but in many instances it is associated with a much smaller proportionate reduction in the total acid secreted, thereby making a more strongly acid solution in the stomach than normal. This is important, because the degree of local irritation depends on the strength of an irritant solution rather than on its amount. Doses that reduce the acid secretion also reduce the secretion of the protective mucin. The effect on the stomach secretion is short lived, one or two hours as a rule, while the undesirable toxic effects persist.

*Motor Effects*—In laboratory animals atropine in enormous doses, by affecting all the elements concerned, may abolish the tone and motility of the stomach wall and of the sphincters. In man, in a small proportion of cases, the largest permissible doses may overcome hypertonus, hyperperistalsis and spasm in the body of the stomach, yet they may be harmful, in that they abolish the normal vagus reflexes which control motor hyperactivity.

In pylorospasm, if the dose is large enough, those forms which are motivated by the vagus may be overcome, but not those motivated by the splanchnic nerves. Emotional pylorospasm will probably not yield to the drug. Atropine gives little promise of success in the pylorospasm of ulcer or other local irritative conditions of the pylorus or its vicinity.

*Trophic Effects*—In chronic ulcer the trophic value of the vagus cannot be abolished with impunity, but, except for the evidence of Aschoff, it is not known to what extent atropine affects this.

43 Fray W. W. Am J M Sc 182:387 (Sept.) 1931  
44 Beams A. J. Nitrites in Spasmodic Conditions of Gastro-Intestinal Tract J A M A 97:907 (Sept 26) 1931  
45 Aschoff L. Lectures on Pathology New York, Paul B Hoeber Inc., 1924 p 309  
46 Best R. R. and Orator V. Ann Surg 96:184 (Aug) 1932

**By-Effects**—Can one expect a hyperacidity or ulcer patient to be improved by a drug which, in doses sufficient to influence the stomach, produces disagreeable and distinctly harmful by-effects that persist long after the stomach actions have ceased? It is yet to be determined whether, as Palmer suggested, the appearance of these side actions may be accepted as the indication that the stomach is being acted on, and their nonappearance the indication that the stomach is not affected.

The minimum single doses that, as a rule, promise any effect whatever on the stomach are 1 mg ( $\frac{1}{160}$  grain) of atropine sulfate by hypodermic injection, and 3 cc (45 minims) of tincture of belladonna or 75 mg ( $1\frac{1}{8}$  grains) of the extract by mouth. In susceptible patients, doses much smaller than these produce the undesired side actions.

#### CONCLUSION

In single maximum doses by hypodermic injection, atropine may have a limited value in reducing secretion and spasm, but in the doses usually employed by mouth, or permissible for any continued treatment, atropine and belladonna are practically without effect on the secretory and motor functions of the stomach.

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#### ABSTRACT OF DISCUSSION

DR. BRUCE C. LOCKWOOD, Detroit. Belladonna and its alkaloid, atropine, have been used clinically for about thirty or forty years for the purpose of reducing gastric secretion and lessening gastro intestinal spasm. Its use was first suggested by Russian physiologists, who found such a pharmacologic action in animals. Further perusal of the literature seems to show that those men who have been working on animals have in general obtained rather conclusive and specific effects from atropine and belladonna. However, when it comes to the literature concerned with its action on the human being, the investigators have had many contradictory results. I have found that one fiftieth grain (0.001 Gm) of atropine dissolved in 30 cc. of water, instilled into the empty stomach just previous to the fractional test meal had absolutely no effect on the secretory curve or on the emptying time. This was contrary to a previous report, which held that atropine had an immediate local effect on the mucosa. I did find, however, that, when the drug was given to tolerance, that is, 15 drops of the tincture of belladonna four times a day for three days, or one fiftieth grain of atropine hypodermically just before the test meal the amount of secretion was reduced about 30 per cent. This represents the average in a series of cases. In certain individuals the acid rose higher with the drug than without it. The variable results from different investigators can possibly be explained in three different ways. First, that there is a difference in the drug action in animal and man. Second, that there is some variation in drug action between different individuals; this occurs with other drugs, notably morphine. Third, that there may be some variation in the alkaloid content of the different preparations of the drug. I should like to have Dr. Bastedo comment on these possibilities. I feel that there is some value to the drug but not as much as one would be led to believe from the animal experiments and certainly not as much value as one would conclude from a study of most textbooks on pharmacology and treatment. I still use the drug occasionally, especially in conjunction with other sedatives, such as opium, bromides and phenobarbital. I have found the phenobarbital belladonna combination of value in lessening persistent gastro-intestinal spasm and continuous secretion in nervous individuals, with or without organic pathologic changes. I believe that any drug that has stood the test of time for such a long period should not be too quickly relegated to the limbo of forgotten and useless remedies.

DR. WALTER A. BASTEDO, New York. With regard to strength, belladonna preparations are as bad as everything else

or as good as everything else. In a Canadian study of drug store specimens of tincture of digitalis the strongest was found to be eleven times as strong as the weakest. Perhaps that is true of belladonna. The U S Pharmacopeia specifies a chemical assay for determining the quality of belladonna, and in the main the preparations of the best manufacturers are reliable, but there has been found as much variation in two batches from one manufacturer as in specimens from two different manufacturers. There probably is a difference in activity between atropine and the total belladonna alkaloids. Atropine is a mixture of equal parts, practically, of levohyoscyamine and dextrohyoscyamine. Hyoscyamine is levohyoscyamine and it is unstable, readily changing into atropine. Atropine is quite stable, and that is one reason why hyoscyamine is not much used. Hyoscyamine is more abundant in the younger belladonna leaves. In its effects in counteracting vagus impulses, hyoscyamine is stronger than atropine, so that the whole belladonna alkaloids may be stronger than atropine but the character of the action is not different, so far as we know, on the stomach and the heart. When I started the first pharmacologic laboratory in New York City in 1901, at Cornell, I was an enthusiast about atropine, for it was found that this drug could do a lot of valuable things. But it suddenly dawned on me that if less than half a grain (0.03 Gm) was given for a 25 pound (11 Kg) dog no striking stimulation of the respiration could be demonstrated. That would be 3 grains (0.2 Gm) for a man. I then went over the different actions of the drug and my enthusiasm for atropine waned, because, to get any pronounced systemic effects in animals, I found it necessary to give doses that would be equivalent to disagreeable or poisonous doses for human beings.

#### CONGENITAL OBSTRUCTIONS OF THE FEMALE URETHRA

WILLIAM E. STEVENS, MD

SAN FRANCISCO

Although the frequency of congenital obstructions of the urinary tract has received universal recognition during the last few years, the female urethra has been almost entirely overlooked in the consideration of these conditions. It is not generally realized that many anomalies such as hypospadias, epispadias, absence of the anterior or posterior portion or of the entire organ, duplications, bifurcations, dilatations, diaphragms or valves and strictures are found in the urethra of this sex.

Hypospadias, like most of the congenital anomalies, is due to incomplete embryologic development. It is, next to stricture, the most common congenital abnormality of the female urinary tract. A stenosis at the external meatus is common in patients with this condition. In the most interesting case of congenital hypospadias in the female coming under my observation, the external urethral orifice was 3.5 cm posterior to its normal position.

Epispadias is rare in females. Davis,<sup>1</sup> however, was able to collect seventy-nine cases that had been reported in the literature previous to 1928. I have not encountered a single case in over 3,600 women with pathologic changes of the urinary tract.

#### ABSENCE OF THE URETHRA

Absence of the posterior portion of the female urethra due like epispadias and hypospadias to arrested development is a very rare anomaly. Skene<sup>2</sup> cited a

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<sup>1</sup> Davis, D. M. Surg. Gynec. & Obst. 47: 680 (Nov.) 1928.  
<sup>2</sup> Skene, A. J. C. Diseases of the Bladder and Urethra in Women. New York: William Wood & Co. 1887, p. 25.

case reported by Oberteuffer of a woman aged 42 who had always urinated through the umbilicus

Petit<sup>3</sup> reported the case of a girl, aged 4 years, whose entire urethra, clitoris and labia minora were absent, and Langenbeck,<sup>4</sup> that of a girl aged 19 in whom no urethra was present, the bladder and vagina forming a common canal. Rose<sup>5</sup> also reported a case of absence of the urethra, the anterior wall extending obliquely backward, closing the bladder. He stated that the patient's "bladder, kidneys and abdomen were filled with water."

Fraenkel<sup>6</sup> reported a case of absence of the urethra with incontinence since birth. The patient became continent following the Martin operation supplemented by muscle faradization.

Middleton<sup>7</sup> reported the case of a girl aged 7 days, who had never passed any urine. He emptied the bladder by pushing a trocar through in the direction of the urethra and was able to keep the opening pervious.

Skene<sup>8</sup> also reported one case of atresia of the urethra but did not mention the type, in which he had great difficulty in delivering the child because of an enormously distended abdomen. The infant died a few hours later, the condition remaining undiagnosed until after death.

A case of double urethra in the female has been reported by Dannreuther<sup>9</sup>. Three other cases, one reported by Kubig,<sup>10</sup> another by Reiprich and Schössler<sup>11</sup> and the third by Furst<sup>12</sup> as double urethras, were probably only partial duplications.

Although congenital obstruction of the male urethra is not infrequently reported, very little attention has been given to this condition in the female. It is due almost exclusively to three anomalies: absence of a portion of the urethra, diaphragms or valves, and strictures. The first two conditions are rare, while the latter, contrary to most textbooks, is comparatively common.

#### DIAPHRAGMS OR VALVES

A search of the literature revealed about fourteen cases of obstruction of the female urethra by diaphragms or valves reported since 1552. These conditions are usually located at the external orifice in the female. They are due to persistent malformation of the cloacal membrane.

1. Barthelemy Cabrol<sup>13</sup> in 1552 operated on a girl, aged 18 years, whose external urethral orifice had been closed by a membrane. Incision resulted in a cure. She had been voiding through a permeable urachus. Other cases that have been reported are the following:

2. J. L. Petit. A young girl with a membrane at the external urethral meatus. The urachus was patent.

3. Zoehrer<sup>14</sup>. A baby girl, aged 7 days, with an obstruction at the external urethral orifice. Perforation was forced with a catheter, resulting in cure.

4. Blum<sup>15</sup>. A girl, aged 7 years, with an obstruction at the external urethral orifice. The urachus was patent. Forced perforation with a catheter resulted in cure.

5. Bar<sup>16</sup>. A stillborn female with an obstruction at the external urethral orifice and distention of the entire urinary tract.

6. Olhausen<sup>17</sup>. A stillborn female with obstruction at the external urethral orifice and dilatation of the urinary tract. There was a communication of the bladder with the uterus and colon. General peritonitis was present.

7. Leonard<sup>18</sup>. A new-born female with obstruction at the external urethral orifice. The bladder was distended. The membrane was perforated with a stylet, resulting in cure.

8. Rocher and Riviere<sup>19</sup>. A female infant whose abdomen became distended three days after birth. The authors saw the patient three days later, at which time the abdomen was markedly distended, hard and, at the lower portion, edematous. They were unable to ascertain whether the baby had urinated previous to that time. Rectal examination revealed a uniform tumefaction anteriorly. A catheter was forced through the urethral orifice with difficulty and 200 cc of purulent urine withdrawn. No urine was voided, and twenty-four hours later, another attempt at catheterization being unsuccessful, a suprapubic puncture was made. The child died the following day. The authors state that the imperforation seemed to be caused by a diaphragm. The possibility of a congenital stricture is to be considered in this case, but the fact that no urine was passed following catheterization makes this seem improbable.

9. Perard<sup>20</sup>. A woman, aged 30, who complained of lumbar pain, difficult urination and incontinence at times. A pale diaphragm with a small opening in its center was found 15 cm from the external urethral meatus. The pain and urinary disturbances disappeared following repeated dilations.

10. G. Van Amber Brown<sup>21</sup>. Imperforation of the urethra near the bladder in a 6 months twin fetus, dead on delivery. The bladder was greatly distended.

11 and 12. Nunez<sup>22</sup>. Two cases in which partial or complete diaphragms were found at or just within the external meatus at birth. One of the infants was born dead.

13. Duparcque<sup>23</sup>. A case in which the urethra was closed at the internal urethral orifice. The bladder and uterus were greatly distended.

14. Addison<sup>24</sup>. A child aged 4 years, with a valve in the middle third of the urethra. The posterior urethra, bladder, ureters and kidney pelves were markedly dilated. The bladder wall was very much thickened.

A study of these fourteen cases shows that the urethra was completely obstructed in eleven and partly obstructed in three. The diaphragm was located at the external urethral orifice in ten, in the middle third of the urethra in two, in the posterior third in one and at the internal urethral orifice in one. Five infants with complete obstruction were born dead. One with complete obstruction died eight days after birth, following cystoscopy. Four with complete obstruction were cured following perforation of the obstruction.

One baby with incomplete obstruction was cured by dilation. One child of four years with incomplete

3. Petit cited by Skene,<sup>2</sup> p. 24.  
4. Langenbeck, cited by Skene,<sup>2</sup> p. 24.  
5. Rose E., cited by Skene,<sup>2</sup> p. 26.  
6. Fraenkel L. *Zentralbl. f. Gynäk.* 53: 333-342 (Feb. 9) 1929.  
7. Middleton cited by Skene,<sup>2</sup> p. 30.  
8. Skene,<sup>2</sup> p. 27.  
9. Dannreuther, W. T. *Complete Double Urethra in a Female* J. A. M. A. 81: 1056 (Sept. 22) 1923.  
10. Kubig G. *Zentralbl. f. Gynäk.* 50: 3125-3128 (Dec. 4) 1926.  
11. Reiprich W. and Schössler M. *Zischr. f. Geburtsh. u. Gynäk.* 60: 663-669 1927.  
12. Furst, cited by Skene,<sup>2</sup> p. 31.  
13. Cited by Menegaux, G. and Boidot M. *J. de chir.* 43: 641-666 (Mar.) 1934.

14. Rocher H. L. and Riviere, M. *Bull. Soc. d'obst. et de gynec.* 16: 325-327 (May) 1927.  
15. Perard A. *fraus d'urolog.* Proc. verb. Paris 14: 306-308, 1911.  
16. Brown G. Van A. and Corbelle, C. *Am. J. Obst. & Gynec.* 5: 358-369 (April) and 433 1923.  
17. Nunez J. E. *Paris thesis* 1882.  
18. Duparcque. *Diseases of the Bladder and Urethra in Women* New York, William Wood & Co. Skene.  
19. Addison Oswald. *Arch. Dis. Childhood* 7: 25-28 (Feb.) 1932.

obstruction died following forced catheterization and the insertion of a retention catheter.

An umbilical fistula due to patency of the urachus was present in four cases, while complete urethral obstruction and communication of the bladder with the uterus and colon were found in another.

Obstructions at the external urethral orifice are easily seen. The olive tip bougie and urethroscope are the most useful instruments for the investigation of other parts of the canal. The female urethra, because of its shortness and greater distensibility, is more accessible to examination and treatment than that of the male.

The gravity of complete urethral occlusion and the importance of early recognition are obvious. Unless the urachus is patent or the bladder empties into the vagina, uterus or colon, the child will be born dead or die shortly after birth. If the child is alive the obstructing membrane should be incised or ruptured with a sound or other instrument at the earliest possible moment.

The bladder, ureters and kidneys are often found to be distended with urine at birth, proving that renal function is sometimes present in the fetus. With this fact in mind I injected diodrast intravenously in a woman during the ninth month of gestation. The fetal kidneys and pelvis were not visualized; however, Brown's observations are of interest in this connection; he stated that a number of women were given intravenous injections of phenolsulfonphthalein and indigo carmine three hours, two hours, one hour and a few minutes before delivery. The total urines of the infants were examined for twenty-four hours, but no dye was found in any case.

#### CONGENITAL STRICTURES

During the last sixteen years it has been my practice to calibrate the urethra of every female patient with symptoms suggestive of a pathologic condition of the urinary tract. The results of this routine procedure, together with the marked improvement following treatment by dilation or meatotomy in those cases in which a diagnosis of stricture was made, have confirmed the opinion expressed at that time that congenital or acquired strictures of the female urethra are of frequent occurrence.

In a study of 1,227 women patients with urinary disturbances I found that strictures were partly or wholly responsible for the symptoms in 458, or 37 per cent. A large majority, about 85.6 per cent, were found at the external meatus. A ring or thin circular band of tissue was seen at this location on withdrawal of a bulb bougie in at least one half of these cases. This band is usually higher at the inferior margin of the meatus and if more extensive could be classified as a diaphragm or valve. Practically all congenital strictures are of this type, and it does not seem improbable that many, if not all of these are, like diaphragms, due to a persistent malformation of the cloacal membrane. Strictures in the canal and at the internal urethral orifice are almost always acquired.

The urethras of 118 adult females who had never suffered from urinary disturbances have been calibrated and the average size was found to be F 26. The average size in 174 strictures, on the other hand, was F 21.45. The average size of the normal female urethra during the first year is about F 12.

The symptoms of congenital strictures vary according to the size of the stricture and the concomitant pathologic condition of the urinary tract. They are, in

the order of their occurrence, frequent urination, local or referred pain, nocturia, burning, dysuria, urgency, difficulty in urination, incontinence or dribbling, and partial or complete retention of urine. Ninety-eight per cent of my patients complained of frequent urination and 60.3 per cent of nocturia. Congenital strictures are probably responsible for many of the cases of enuresis, so common in children.

The diagnosis is simple if the possibility of their occurrence is remembered and the urethra calibrated with olive tip bougies. A predisposition to infection is present whenever there is obstruction, and congenital strictures are probably important etiologic factors in the cystitis and pyelitis so frequently encountered in female infants and children. Tight strictures, like diaphragms or valves, are directly or indirectly responsible for some of the cases of advanced hydro-ureters and hydronephrosis with destruction of the kidneys in infants born dead or dying shortly after birth. It has been found that a thickening of the bladder wall will be responsible at times for partial occlusion of the lower end of the ureters, with resulting dilatation. In a series of ninety-four cases of urethral strictures previously reported, I found ureteral strictures in 46 per cent.

In those cases which do not clear up spontaneously or under conservative treatment, urethral as well as ureteral strictures should be suspected. Recurrence of bladder and kidney infection is undoubtedly more common in the presence of this condition. Urethritis is frequently associated with urethral obstruction, and ascending lymphatic infection of the upper urinary tract from this source is not uncommon.

The effect of strictures of large caliber may not be noticed until infection supervenes, when, in addition to acting as a predisposing factor to the infection, they are responsible for its persistence in the urethra and upper urinary tract.

Congenital obstructions are probably also responsible for bladder diverticula in infants and children. Crane recently reported four cases of bladder diverticula in women, two of whom also had urethral strictures, and Kutzmann reported six cases of bladder diverticula in females, four of whom also had urethral strictures.

#### TREATMENT

Although many strictures at the external orifice of the female urethra yield readily to dilation, and temporary improvement is common, meatotomy is the procedure of choice for obstruction at this location. It is preferable to bring the skin and mucous membrane together on both sides of the meatus with fine catgut following incision. This will result in less postoperative bleeding and prompt healing. Further passage of dilators is seldom required.

#### REPORT OF CASES

CASE 1.—A baby girl, aged 12 months, was referred with a history of pyelocystitis of three months' duration. She had vomited more or less since birth and was extremely emaciated. Examination revealed a stricture at the external urethral meatus. The urine contained numerous pus cells. A moderately trabeculated bladder wall was found on cystoscopy. Both kidneys were infected. Improvement began immediately after the first cystoscopy and was due largely to the dilation of the congenital stricture by the cystoscope.

CASE 2.—A girl, aged 8 years, complained of difficult urination, inability to empty the bladder completely and itching at the urethral orifice. The mother stated that it had been necessary to dilate a very tight urethral stricture when she was 3 months old and again during her third and seventh years. Examination revealed a congenital stricture at the internal urethral orifice.

and 8 cc. of residual urine. Immediate improvement followed dilation. An early meatotomy would have prevented subsequent trouble in this case.

**CASE 3**—A girl, aged 8 years, complained of occasional attacks of frequent urination, burning, tenderness at the right costovertebral angle and fever during a period of two years. All subjective symptoms, as well as the kidney infection, disappeared following one dilation of a urethral stricture and a single catheterization of the right ureter.

**CASE 4**—A girl, aged 4 years, had suffered from frequent urination and nocturia for two and one-half years. Immediate improvement followed dilation of a congenital stricture at the external urethral meatus.

**CASE 5**—The following case has been previously reported but is especially interesting because of the small size of the congenital stricture. A girl, aged 3 years, complained of frequent and painful urination. Examination revealed a stricture at the external urethral meatus. The urine contained a few pus cells. Immediate improvement followed the first dilation of the urethra, and all symptoms disappeared following the third.

#### SUMMARY AND CONCLUSION

1 Diaphragms or valves in addition to several other congenital anomalies responsible for symptoms of obstruction are occasionally found in the female urethra.

2 Congenital strictures are common.

3 Meatotomy is the procedure of choice in the treatment of this condition.

4 The olive tip bougie, skenoscope and urethroscopic are the most useful instruments for the detection of urethral obstructions. These instruments should always be employed in the examination of infants and children as well as in adults with symptoms suggestive of a pathologic condition of the urinary tract.

5 The early detection and correction of congenital strictures, diaphragms and other conditions responsible for obstruction of the female urethra are obviously of the greatest importance.

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#### ABSTRACT OF DISCUSSION

**DR. FRANCIS P. TWINEM**, New York. With too many urologists the female urethra has been considered merely a structure on which to rest a cystoscope during bladder observation and urethral catheterization. In recent years Stevens and others have brought the subject to the fore. It is safe to say that the urethra is wholly or partly responsible for urinary disturbances in women in at least 50 per cent of cases and is wholly responsible in about one fifth of these cases. Instances of complete urinary obstruction of the female infant are rare. I know of one case in which there was complete retention in a child of 20 months due to sarcoma of the uterus. Many urologists have seen cases of hypospadias with some stenosis at the external meatus. I have seen a few cases of frequency, nocturia and urgency in very young girls, in whom these symptoms were promptly relieved by the passage of a cystoscope, as happened in several of the cases cited by Dr. Stevens. In some of these cases the child is born with some slight urethral obstruction, which after a few years of growth begins to cause symptoms. I recall seeing a necropsy on a girl of 5 years in whom the renal pelvis and ureters were greatly dilated and the bladder wall markedly thickened. The posterior urethra showed a valvelike formation. Dr. Kirwin reported a case of a female infant who came to necropsy in sixteen days. This child showed a complete absence of the urethra, with the ureters emptying into a closed cloacal chamber. I believe that stricture of the adult female urethra is more common than has been believed and I wish to emphasize the value of the olive bougie in testing for stricture. A number 20 soft catheter may pass with comparative ease and a stricture of moderate degree may still be present. Most of these cases of stricture in women are acquired, but I think it is quite probable that some of them are due to congenital conditions that in later life may give rise to definite symptoms.

## THE IMPORTANCE OF EARLY DIAGNOSIS IN BRONCHIECTASIS

### A CLINICAL AND ROENTGENOLOGIC STUDY OF ONE HUNDRED CASES

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PHILADELPHIA

Acquired bronchiectasis is a chronic progressive pulmonary disease characterized by dilatation of the bronchi, and it occurs without pathognomonic symptoms. Many theories as to its pathogenesis have been advanced. It is now generally accepted that softening of the bronchial wall, associated either with increased intrabronchial pressure or with extrabronchial traction, is responsible for its development.

Bronchiectatic dilatations are divided, according to gross anatomic appearance, into the saccular, in which the bronchi form spherical pockets, and the cylindric, in which they are dilated throughout their length. Other forms are variations of these two principal kinds.

When once established, the disease does not respond favorably to ordinary medical measures. With improvement in the technic of thoracic surgery, recourse will undoubtedly be had in increasing frequency to surgical measures for the eradication of the disease. Many of the surgical procedures employed in treatment of bronchiectasis are formidable, and the operative mortality rate is greatly influenced by the extent.

From this it would appear that, if the incidence of the disease is to be lessened and its effects are to be corrected, two things are necessary. First, there must be more general recognition of the conditions with which bronchiectasis is associated and an effort made to control them, and, second, when the condition has developed, early diagnosis is imperative for lessening the difficulties and hazards of surgery.

#### OBSERVATIONS IN ONE HUNDRED CASES

With improved methods of diagnosis, notably the roentgen ray and bronchoscopy, bronchiectasis is being more widely recognized. This study is based on 100 cases observed in the X-Ray Department of the Jefferson Hospital. The cases were not selected and are only part of a much larger number. It is believed that study of this group gives a fairly accurate cross-section of the entire series.

**Sex**—Fifty-two patients were males and forty-eight females (table 1).

**Age**—Seventy-seven patients were 30 years of age or under when they first came under observation, twenty-two were in the first decade, twenty-eight in the second and twenty-seven in the third. Twenty-three were over 30 (table 1).

**Extent of Involvement**—This was determined by the roentgenographic and bronchoscopic observations. All patients were studied roentgenographically, usually several times, in ninety-three, bronchoscopic examination was made by Dr. Louis H. Clerf, and in seventy-seven he instilled iodized oil for pneumonography.

Three arbitrary divisions of extent have been made: first, slight or minimal bronchiectasis, thirteen cases presenting definite roentgenographic evidence of structural change but indeterminate bronchoscopic changes frequently described as tracheobronchitis; second, moderate bronchiectasis, seventy-six cases presenting



unmistakable roentgen indications of the disease and bronchoscopic evidence of suppuration, third, advanced bronchiectasis, eleven cases presenting widespread and massive structural changes and pleural complications

**Side of Involvement**—It was determined roentgenographically that in forty-one patients the disease involved the left lung, in twenty-three it involved the right lung and in thirty-six it was bilateral (table 1)

**Duration**—Eighteen patients had symptoms less than one year, thirty-two from one to five years, thirteen from six to ten years, fifteen from eleven to twenty years, and two for more than twenty years. Seventeen patients had the disease from infancy. In three the duration could not be determined (table 2)

**Etiology**—In forty-five cases the onset was secondary to some disease of the respiratory tract, diagnosed as an acute nonspecific respiratory infection, "cold," "grip," "sinusitis" in eighteen, bronchopneumonia in two, influenza in five, and pneumonia in twenty. In twelve cases onset followed one of the diseases of childhood, in seven it was a sequel of whooping cough, in three of scarlet fever, in two of measles. The inhalation of a foreign body into the bronchus was the cause in four. In two, x-ray evidence of bronchiectasis was associated with asthma. One or more cases were

TABLE 1—Sex, Age, Extent and Side of Involvement

| Involve-<br>ment | Sex  |     | Age Years |      |       |       |       |       |       |       |       |       | Side  |      |                     |
|------------------|------|-----|-----------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|------|---------------------|
|                  | Male | Fe- | 15        | 6-10 | 11-20 | 21-30 | 31-40 | 41-50 | 51-60 | 61-70 | 71-80 | 81-90 | Right | Left | Bil-<br>at-<br>eral |
|                  |      |     |           |      |       |       |       |       |       |       |       |       |       |      |                     |
| Slight           | 13   | 4   | 9         | —    | 3     | 3     | 4     | 3     | —     | —     | —     | —     | 4     | 6    | 3                   |
| Moderate         | 70   | 43  | 33        | 0    | 9     | 24    | 19    | 0     | 0     | 4     | 2     | 17    | 27    | 32   | —                   |
| Advanced         | 11   | 5   | 6         | 1    | 3     | 1     | 4     | 1     | —     | 1     | 2     | 2     | 8     | 1    | —                   |
| Total            | 100  | 62  | 48        | 7    | 15    | 28    | 27    | 10    | 0     | 4     | 3     | 23    | 41    | 36   | —                   |

secondary to bronchial compression by enlarged tuberculous mediastinal nodes, gassing in the World War, pleurisy, postoperative pulmonary atelectasis, post-tonsillectomic abscess, stenosis of the larynx secondary to thyroidectomy or streptococcal sore throat. In three the disease was associated with an intrabronchial neoplasm (two adenoma, one papilloma). In twenty-five the etiologic factor could not be determined (table 3)

**Symptoms**—In order of frequency the following symptoms were recorded: cough by ninety-nine patients, expectoration by ninety-one, fever in sixty-six, loss of weight or, in the case of children, failure to gain in fifty-four, pain in the chest by forty-two, dyspnea in forty-one, hemoptysis by twenty-seven, and incurvation of the nails or clubbing of the fingers by twenty-six (table 4)

**Roentgenographic Appearance**—All the cases were classified according to extent as slight, moderate or advanced

In those with slight involvement an increase in the density of the basal shadows was noted. The increase over the normal was usually not great and was most marked near the borders of the heart, sometimes it could be made out behind the cardiac shadow. In this group the increased shadows radiated as filamentous fuzzy markings from the root areas. Instillation of iodized oil revealed only slight changes in the bronchi with the formation of small pools 5 mm in diameter or dilatation of the bronchi of the same size. Sometimes there was no pneumonographic indication of

dilatation and yet the condition was sufficiently pronounced on the direct roentgenogram to warrant the diagnosis of bronchiectasis

In those classed as moderate, the increase in the density of the shadows was definite. The changes were usually basal and the presence of exudate was obvious. In this group there were more cases with unilateral

TABLE 2—Duration of Symptoms

|                    | Extent of Bronchiectasis |          |          |
|--------------------|--------------------------|----------|----------|
|                    | Slight                   | Moderate | Advanced |
| Since Infancy      | 1                        | 14       | 2        |
| Less than one year | 2                        | 14       | —        |
| 1 to 5 years       | 4                        | 24       | 4        |
| 6 to 10 years      | 2                        | 11       | —        |
| 11 to 20 years     | 3                        | 9        | 3        |
| More than 20 years | —                        | 2        | —        |
| Unknown            | 1                        | 2        | —        |

than with bilateral involvement. Twenty-seven of the unilateral cases occurred on the left side and seventeen on the right, thirty-two were bilateral.

Cases were classified as advanced when the increase in density was pronounced either because of the extent of the disease or because of the presence of pleural complications. Most of the cases in this category were unilateral, eight occurred on the left side, two on the right and only one was bilateral (table 1)

**Bronchoscopic Manifestations**—Dr Louis H. Clerf studied ninety-three cases bronchoscopically and in seventy-seven instilled iodized oil for pneumonography. Eighty-four presented evidence of inflammatory changes in the bronchial tree, in fifteen tracheobronchitis, in sixty-nine there was actual suppuration and pus was aspirated. Nine patients had bronchoscopic evidence of occlusion, in three the narrowing was due to extrabronchial pressure and in the remainder it followed intrabronchial narrowing, in three there was scar formation, in two cases an adenoma was found and in one a papilloma. On seven patients bronchoscopy was not done.

**Roentgen Examination of the Accessory Sinuses**—Sixty-six patients were examined. In fourteen, or

TABLE 3—Etiology

|                                   |     |                                  | Slight | Mod-<br>erate | Ad-<br>vanced |
|-----------------------------------|-----|----------------------------------|--------|---------------|---------------|
| Acute<br>respiratory<br>infection | 45  | Acute infection                  | —      | 17            | 1             |
|                                   |     | Bronchopneumonia                 | —      | 2             | —             |
|                                   |     | Influenza                        | —      | 4             | 1             |
|                                   |     | Pneumonia                        | —      | 16            | 4             |
| Diseases of<br>childhood          | 12  | Measles                          | —      | 2             | —             |
|                                   |     | Scarlet fever                    | —      | 1             | —             |
|                                   |     | Whooping cough                   | 3      | 4             | —             |
| Bronchial<br>occlusion            | 6   | Extrabronchial compression       | —      | 1             | —             |
|                                   |     | Foreign body                     | 1      | 1             | 2             |
|                                   |     | Neoplasm                         | —      | 3             | —             |
| Unclassified                      | 10  | Asthma                           | 1      | 1             | —             |
|                                   |     | Gassed World War                 | 1      | —             | —             |
|                                   |     | Pleurisy                         | 1      | —             | —             |
|                                   |     | Postoperative atelectasis        | —      | 2             | —             |
|                                   |     | Postoperative laryngeal stenosis | —      | 1             | —             |
|                                   |     | Post tonsillectomic abscess      | —      | 2             | —             |
|                                   |     | Streptococcal sore throat        | —      | —             | 1             |
|                                   | 25  | Unknown                          | 6      | 17            | 2             |
| Total                             | 100 |                                  | 17     | 76            | 11            |

21.2 per cent, the sinuses were normal, in fifteen, or 22.7 per cent, the involvement was slight and consisted of decreased translucency due to thickened mucous membrane, in twenty-one, or 31.7 per cent, there was marked cloudiness of most, or one or more contained fluid or mucocoeles, and in sixteen, or 24.2 per cent, there was extensive disease, in many instances a py-sinusitis (table 5)



**Bacteriology and Serology**—Uncontaminated secretions obtained by Dr. Clerf by bronchoscopic aspiration were examined bacteriologically by Dr. Carl J. Bucher. Smears and cultures were made. In some instances in which bronchoscopic specimens were not obtained the sputum was examined. A great variety of organisms were identified, but because they seem to bear no specific relationship to the disease, its etiologic factor or extent, they are recorded without being tabulated. *Pneumococcus*, *Streptococcus haemolyticus*, *Streptococcus viridans*, *Streptococcus nonhaemolyticus*, *Staphylococcus albus*, *Staphylococcus aureus*, *Micrococcus catarrhalis*, *Micrococcus pharyngis siccus*, *Micrococcus tetragenus*, *Micrococcus flavus*, *Bacillus influenzae* and *Bacillus mucosus-capsulatus* were the most frequently encountered, and moniliae, spirochetes, fusiform bacilli and spirilla were occasionally recorded. Tubercle bacilli were never found.

Two patients had positive serologic reactions, in both the Wassermann and Kahn tests were positive.

## COMMENT

Bronchiectasis begins in most instances in childhood. Ballon, Singer and Graham<sup>1</sup> in their review of a series of similar cases, comment on the relatively early age of patients seen with the disease and the long duration before patients applied for treatment. A parallel occurs in this series, 77 per cent being under 30 years of age and 54 per cent dating the beginning of their symptoms from the first decade of life. Ballon, Singer and Graham speculate as to the cause of this. Flick<sup>2</sup> believes that a study of the ultimate fate of patients with bronchiectasis coming under observation early in life would reveal that many of them die from complications such as recurring pneumonia, pulmonary abscess, empyema and cerebral abscess. It is his conviction that a statistical study relating to prognosis, by revealing the grave consequences of the disease, would support the view that early surgical intervention, in spite of its immediate risks, will in the long run give the best results.

TABLE 4—Symptoms

|               | Present              |          |          | Absent               |          |          | Not Recorded         |          |          | Percentage of<br>Recorded Cases |
|---------------|----------------------|----------|----------|----------------------|----------|----------|----------------------|----------|----------|---------------------------------|
|               | Extent of<br>Disease |          |          | Extent of<br>Disease |          |          | Extent of<br>Disease |          |          |                                 |
|               | Slight               | Moderate | Advanced | Slight               | Moderate | Advanced | Slight               | Moderate | Advanced |                                 |
| Cough         | 99                   | 13       | 75       | 11                   |          |          |                      | 1        |          | 99.0                            |
| Expectoration | 91                   | 13       | 67       | 11                   |          |          |                      | 6        |          | 96.3                            |
| Fever         | 66                   | 8        | 50       | 8                    | 4        | 20       | 1                    | 6        | 28       | 72.1                            |
| Weight loss   | 54                   | 6        | 42       | 6                    | 3        | 10       |                      | 15       | 5        | 63.3                            |
| Pain          | 42                   | 7        | 30       | 5                    | 3        | 21       | 2                    | 23       | 4        | 61.7                            |
| Dyspnea       | 41                   | 7        | 26       | 8                    | 1        | 15       |                      | 3        | 3        | 71.9                            |
| Hemoptysis    | 27                   | 3        | 18       | 6                    | 4        | 30       | 2                    | 28       | 3        | 42.8                            |
| Cinbbling     | 26                   | 1        | 18       | 7                    | 4        | 32       |                      | 20       | 4        | 41.9                            |

The observation of Ballon and his co-workers as to the late date at which patients come for medical aid ignores the fact that off and on many had been under the care of physicians. That they reported late to his clinic and, in this series, came late to ours, is due to two causes. First, many physicians lack familiarity with the disease, as is attested by the diagnoses under which patients are treated, namely, bronchitis, catarrh, tuberculosis, asthma, pleurisy, abscess and unresolved

pneumonia. Second, many practitioners believe that the disease is hopeless and that symptomatic treatment is all that is available.

The age at which the patients in this series first came under observation (table 1) is less informative than a study of the age of onset as determined from the history (table 6). Fifty-four patients dated their symp-

TABLE 5—Sinus Involvement

| Extent of Sinus Disease | Extent of Bronchiectasis |          |          |
|-------------------------|--------------------------|----------|----------|
|                         | Slight                   | Moderate | Advanced |
| None                    | 1                        | 10       | 3        |
| Slight                  | 5                        | 9        | 1        |
| Moderate                | 2                        | 19       |          |
| Advanced                | 2                        | 13       | 1        |
| Not examined            | 3                        | 20       | 6        |

toms from the first decade, and only sixteen were over 30 years of age when the condition first became manifest. An analysis of the etiologic factors (table 3) throws light on the age of onset. In forty-five instances the first symptoms followed an acute respiratory infection. In infancy these were variously labeled bronchopneumonia, "colds" and "grip," and in childhood they were diagnosed as pneumonia. In twelve the symptoms dated from an attack of measles, scarlet fever or whooping cough. Except in one instance all cases associated with the aspiration of a foreign body occurred in children. These cases make up the great number of those occurring in the first decade.

Of the cases in which disease was dated from later life three were secondary to neoplastic bronchial occlusion, the involvement in each was unilateral, and bronchoscopic removal of the tumor mass with microscopic examination of the tissue confirmed the diagnosis.

The case secondary to post-thyroidectomy stenosis of the larynx was probably due to retained secretions, a form of aspiration infection in an adult. I have seen a similar case due to interference with drainage following pressure on the trachea by an aneurysm of the innominate artery. While none are recorded in this series, it is not uncommon to see infections of the lower lobe due to aspiration of secretions and food particles develop during the course of esophageal stenosis. Sometimes these terminate in bronchiectasis, in children the condition is usually associated with caustic strictures and in adults with carcinoma of the esophagus.

Seventeen patients whose ages varied from 4 to 54 years dated their disease from infancy (table 7). All but one had a moderate or far advanced disease. In the one patient with slight changes, a youth aged 15, involvement roentgenographically was bilateral and on bronchoscopy the entire tract was found to be inflamed but there was no evidence of pus, pneumonography was also negative. This patient was suffering from asthma, and the validity of the diagnosis of bronchiectasis may be questioned. There can be no doubt as to the accuracy of the diagnosis of bronchiectasis in the remaining sixteen in this group. The etiologic factor was not clear in six, but the remainder dated onset from one of the diseases of childhood or from an attack of pneumonia or some other infection of the respiratory tract.

The possibility of permanent damage to the pulmonary structures developing as a sequel to infections of the respiratory tract in children, either independently of or as an accompaniment of the acute infections of childhood should be borne in mind. Control of cough-

<sup>1</sup> Ballon, H. Singer J. J. and Graham E. A. J. Thoracic Surg. 502:561 (June) 1932.  
<sup>2</sup> Flick J. B. Personal communication to the author.

ing might lessen the development of bronchiectasis. Undoubtedly infants suffering from respiratory infections should be examined roentgenographically and at the earliest suggestion of anatomic change bronchoscopy should be done. Bronchoscopic removal of retained secretions in these children might lessen the development of bronchiectasis in later life.

The symptomatology is not distinctive. Fever present in 72.5 per cent, was usually not high, in uncomplicated cases it ranged from 99 to 100, when sepsis was marked as in the cases associated with abscess it was much higher. The high incidence of dyspnea, 71.9 per cent of cases in which there was a record, was surprising, many of these patients complained of wheeze also. Hemoptysis, present in 42.8 per cent of cases, varied from blood streaked sputum to frank hemorrhage, in most instances it was slight in amount. The incidence of pain in the chest, 61.7 per cent of cases in which the symptom is recorded, is higher than in other reported series. Pain varied in intensity from soreness to that of more severe degree, in most instances it was not marked.

The relationship of infection of the accessory sinuses to pulmonary infection has been commented on frequently in recent years. Clerf<sup>3</sup> has discussed it from the point of view of the bronchoscopist, and Manges<sup>4</sup> from that of the roentgenologist. In this series the high incidence of infection of the sinuses occurring in bronchiectasis is further borne out, only 21 per cent of the patients whose sinuses were studied roentgenographically were normal. Of the 79 per cent who showed evidence of disease change, sixteen, or 24 per cent, had marked disease, in most instances a pansinusitis.

Determination of the extent of the disease is based on arbitrary lines and influenced by the roentgenologist's personal experience. Increased markings in the lower lobes are always to be looked on as suggestive of bronchiectasis if asthma and passive congestion can be excluded. In the cases presenting early involvement it may not be possible to obtain confirmatory proof on direct bronchoscopic examination, in cases of this type the bronchoscopist often reports inflammatory changes of the trachea and bronchi, a tracheobronchitis, without evidence of suppuration.

TABLE 6—Age at Time of Onset

|           | Extent of Involvement |          |          |
|-----------|-----------------------|----------|----------|
|           | Slight                | Moderate | Advanced |
| Infancy   | 1                     | 14       | 2        |
| 1-5 years | 8                     | 15       | 3        |
| 6-10      | 3                     | 11       | 2        |
| 11-20     | 2                     | 11       | 2        |
| 21-30     | 3                     | 6        | 1        |
| 31-40     |                       | 7        | 1        |
| Over 40   |                       | 7        | 1        |
| Unknown   | 1                     | 2        |          |

Roentgenography after the instillation of iodized oil may reveal the presence of bronchiectasis.

All patients with roentgenographic changes suggestive of bronchiectasis should be kept under observation and the examination repeated at intervals. One patient, who dated the onset of symptoms from gassing in the World War, had increased roentgenographic markings in the lower lobes in 1928 but negative bronchoscopic and pneumonographic changes. His symptoms persisted, and in 1933 bronchoscopy revealed

pus in the left lower lobe bronchus and by the instillation of iodized oil bronchiectatic cavities were outlined in the area.

Increased markings simulating bronchiectasis of slight extent occur frequently in asthma and are also associated with passive congestion. Pneumonograms of

TABLE 7—Patients with Symptoms Dating to Infancy

| Extent | Age | Sex | Etiology              | Roentgen Involvement                | Bronchoscopy                             |
|--------|-----|-----|-----------------------|-------------------------------------|--|
| Slight | 15  | ♂   | Asthma                | Bilateral lower lobes               | Entire tract inflamed; no pus            |
| Mod    | 4   | ♂   | Pneumonia             | Bilateral lower lobes               | Pus both lower lobes                     |
| Mod    | 11  | ♀   | Unknown               | Bilateral lower lobes               | Pus both lower lobes                     |
| Mod    | 6   | ♂   | Unknown               | Right lower lobe                    | Enlarged nodes; pus both lower lobes     |
| Mod    | 14  | ♀   | Pneumonia             | Left lower lobe                     | Pus left upper and lower lobes           |
| Mod    | 15  | ♂   | Pneumonia             | Right lower lobe                    | Pus right lower lobe                     |
| Mod    | 12  | ♂   | Pneumonia             | Right lower lobe                    | Pus right lower lobe                     |
| Mod    | 29  | ♀   | Whooping cough        | Bilateral lower lobes               | Pus both lower lobes                     |
| Mod    | 11  | ♂   | Whooping cough        | Bilateral lower lobes               | Pus both lower lobes                     |
| Mod    | 54  | ♀   | Acute resp infection  | Bilateral lower lobes               | Pus both lower lobes                     |
| Mod    | 19  | ♀   | Pneumonia             | Bilateral lower lobes               | Pus right lower lobe                     |
| Mod    | 19  | ♀   | Unknown               | Right lower sinus transversus       | Pus right lower lobe                     |
| Mod    | 26  | ♀   | Unknown               | Bilateral lower lobes               | Pus both lower lobes                     |
| Mod    | 22  | ♂   | Pneumonia             | Left lower lobe                     | Inflammatory stenosis left main bronchus |
| Mod    | 14  | ♀   | Unknown               | Bilateral lower lobes               | Pus left lower lobe                      |
| Adv    | 32  | ♂   | Diseases of childhood | Left lower extensive pneumoconiosis | Pus both lower lobes                     |
| Adv    | 24  | ♀   | Unknown               | Left lower lobe                     | Pus left lower lobe                      |

asthmatic patients almost invariably reveal bronchi of normal width, and the bronchoscopist usually reports the absence of pus. The clinical changes and roentgenographic evidence of cardiac enlargement differentiate bronchiectasis and passive congestion. In passive congestion the basal increased markings disappear with clinical improvement, while in bronchiectasis the changes are permanent.

More extensive bronchiectasis offers no difficulty in diagnosis to the roentgenologist when direct examination is supplemented by pneumonography. Many cases in this series classified as moderately advanced might, when restudied, be called extensive. None, however, could be classified as slight, because in each instance the changes were definite and roentgenologically distinctive.

#### CONCLUSIONS

1 In a series of 100 cases of bronchiectasis, fifty-two patients were males and forty-eight were females. Seventy-seven were under 30 years of age when they first came under observation. In forty-one the disease involved the left lung, in twenty-three it involved the right lung, and in thirty-six it was bilateral.

2 The disease is essentially chronic. Fifty patients had symptoms of less than five years' duration, forty-seven of more than five years, and in three the duration was indeterminable.

3 The onset is in early life. Seventeen patients whose ages varied from 4 years to 54 had had symptoms since infancy (17 per cent), 80 per cent dated symptoms from the first decade.

<sup>3</sup> Clerf L. H. Laryngoscope 44: 568-571 (July) 1934.

<sup>4</sup> Manges W. F. Pennsylvania M. J. 35: 240-242 (Jan.) 1932.  
Arch. Pediat. 40: 141-154 (March) 1932.

4 In forty-five patients onset was secondary to an infection of the respiratory tract, in twelve it followed an infectious disease of childhood

5 The symptomatology and bacteriologic observations are not distinctive

6 Of sixty-six patients in whom the accessory sinuses were examined roentgenographically, 86 per cent showed evidence of inflammatory change, in 24.2 per cent changes were marked

7 Roentgenographic and bronchoscopic examinations are essential for early diagnosis. Characteristic pneumonographic changes are necessary for indisputable proof of the existence of the disease

8 When direct roentgenographic examination is suggestive of bronchiectasis and the bronchoscopic and pneumonographic changes are indeterminate, the patient should be kept under close observation and the examinations repeated

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## VENTRICULOGRAPHY WITH COLLOIDAL THORIUM DIOXIDE

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As a means of delineating the ventricular system, we have found that colloidal thorium dioxide has a number of advantages that are not possessed by air. Whether these advantages will outweigh the possible disadvantages and dangers is not yet clear, although from an experience of nearly two years in the use of the material the advantages seem to preponderate.

Colloidal thorium dioxide is freely miscible with the ventricular fluid, permitting ready diffusion throughout the cavities. It is also of high specific gravity, tending to reach the dependent points in the ventricular system, outlining the aqueduct and the fourth ventricle. It is of high radiopacity, so that only small quantities are necessary for the satisfactory visualization of the whole system. In cases in which the fluid pathways are free from obstruction it passes readily to the subarachnoid space and is eliminated within four hours from the cranial cavity, at least in amounts detectable by the roentgen ray. Most important of all, the pressure relationships within the cranial cavity are not disturbed, since the liquid cushion on which the brain is borne does not have to be removed in order to obtain a clear picture.

The injection of any foreign substance into the cavities of the brain produces an inflammatory reaction. This has been shown repeatedly in the case of air,<sup>1</sup> since encephalography provokes moderate increase in cells and globulin in the cerebrospinal fluid. Our experiments have not progressed far enough to determine whether the cellular reaction following the injection of thorium dioxide is more severe than that following the injection of air. Thorium is extremely inert, and it has been suggested that the headache that follows the injection is due to the protective colloid dextrin rather

than to the thorium itself. There is no immediate discomfort and usually no sensation at all.

The danger resulting from the storage of a radioactive material in the body is one that has not yet been fully evaluated. The recent work of Oberling and his colleagues<sup>2</sup> demonstrating the production of sarcomas by intraperitoneal injection in the rat must not be considered too serious a drawback, on account of the massive doses employed. Even in the demonstration of the liver and spleen after intravenous injection of colloidal thorium dioxide comparatively large doses are employed, and as yet there have been no reports of carcinogenic activity.

The greatest danger in the use of the method seems to lie in the inflammatory effects in cases in which the ventricular system is obstructed. When the thorium remains in the ventricular cavities for a time the protective colloid is dispersed and the thorium dioxide flocculates, settling in small masses on the ependyma and there becoming embedded, with the formation of granulomas. This particular reaction may possibly be avoided by irrigating the ventricles following the injection. In our work we have not met with any disastrous results following the retention of thorium in the ventricular system.

We believe that colloidal thorium dioxide is particularly useful in delineating the ventricles rather than the subarachnoid spaces, although it is possible that the method may find a valuable application in the visualization of areas of infarction.<sup>3</sup> From published reports,<sup>4</sup> the introduction of the material into the basal cistern is accompanied by some danger, and a few deaths have been reported. Presumably the material, when injected into the ventricles, is sufficiently diluted by the time it reaches the medullary area so that it does not present this objection.

We and our colleagues have now used colloidal thorium dioxide for ventriculography in about twenty cases. In one case death occurred within an hour or two, and at necropsy a huge infiltrating glioma was found in the basal ganglia occluding the foramen of Monro and limiting the injected material to the side of operation. In two cases there have been moderately severe reactions with fever, stiffness of the neck and vomiting, but clearing of the symptoms within a few days. Both of these patients had ventricular obstruction. In one case in which the material was injected into the lumbar sac for demonstration of a suspected tumor of the cauda equina there was considerable headache, but the patient was already septic from urinary infection, so that the febrile reaction could not be estimated precisely. Most of our patients have felt transitory discomfort ranging up to easily controllable headache, although some of them (without gross lesions) were able to be out of bed on the third day and to go home on the fourth. The chief complaint of one patient the day after operation was that he was not allowed a full diet. He was sitting up, reading, in entire comfort except for soreness over the scalp.

2 Oberling C, and Guérin M. Action du thorotrast sur le sarcome de Jensen du rat blanc. Bull. Association française pour l'étude du cancer 22 469-489 (July) 1933. Roussy G. Oberling C and Guérin M. Experimental Sarcoma Following Injection of Thorium Dioxide. Paris letter J. A. M. A. 104 1258 (April 6) 1935.  
3 Radovici A, Bazgan I and Meller O. Liquidographie du foyer de ramollissement cérébral par le thorotrast sous arachnoïdée. Encéphale 28 726 (Dec.) 1933.  
4 Coe, F. O. Ottel L. S. and Hedley O. F. Thorotrast Encephalography by Cisterna Puncture. M. Ann. District of Columbia 2 277-279 (Dec.) 1933. Radovici A. and Meller O. La liquidographie chez l'homme (essai d'encéphalomyélographie par le thorium colloïdal). Rev. neurol. 1 541 (April) 1935. Capua A. Sulla encefalomyelografia con thorotrast. Radiol. med. 20: 1376-1383 (Nov.) 1933.

From the Department of Neurology, George Washington University School of Medicine.

Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1 Tschugunoff S. A. Zur Frage über die Veränderungen der cerebrospinalen Flüssigkeit nach der Encephalographie. Ztschr. f. d. ges. Neurol. u. Psychiat. 122 452 1929.

## VENTRICULOGRAMS

The ventriculograms made with colloidal thorium dioxide are decidedly different in appearance from those made with air. Not only is the medium opaque but it diffuses more or less completely through the ventricles, so that in favorable cases the complete outline of the ventricle is obtained. This means that in the lateral view the serrated outline of the third ventricle is apparent, as well as the aqueduct and fourth ventricle (fig 1), and that in the frontal view the ventricles curve around in ribbon fashion, and the lozenge form of the fourth ventricle with its lateral recesses is fairly clearly outlined (fig 2). Not infrequently the choroid plexus can be seen in great definition. The preoptic recess and the infundibular recess show up with great clarity in some cases, and in our first report we<sup>5</sup> stressed the observation of the hooklike process at the end of the temporal horn of the ventricle, a structure probably never observed in ventriculograms made with air.



Fig 1—Lateral view of ventriculogram made with thorium dioxide sol. R. T., a Negro girl, aged 11 years, admitted to the Children's Hospital Aug. 13, 1934, complained of severe frontal headaches for two months, followed recently by diplopia, ptosis, and vomiting. Pulmonary tuberculosis had been diagnosed a year before. Examination showed complete left external ophthalmoplegia and no light reaction; convergence and consensual reflexes were normal. The right eye was normal. Four days after admission, bilateral papilledema was 2 diopters; the left eye was blind, and the patient was somnolent. A ventriculogram was taken August 22, with 5 cc. of thorium dioxide sol in both ventricles. The next day the temperature rose to 104 F, the head was retracted, and the body generally stiff with exaggerated reflexes; this reaction subsided in ten days. September 11 the pupils were widely dilated, the left inactive, and the right sluggish. Blindness was complete. There was a slight increase in the deep reflexes on the right side but no cerebellar signs. Roentgenograms of the sinuses were negative. The condition has been stationary since discharge. The ventriculogram reveals slightly dilated lateral ventricles with normal third and fourth ventricles. The position of the aqueduct is normal. The diagnosis was chiasmal arachnoiditis.

The most important alterations found in our series of cases have been

1 Lateral deviation of the left lateral ventricle with absence of thorium in the right lateral ventricle in the case already mentioned (fig 3)

2 Lateral deviation of both lateral ventricles in a case of vast infiltrating glioma of the left hemisphere (fig 4)

<sup>5</sup> Schoenfeld, H. H., and Freeman, Walter. Ventriculography and Encephalography by Means of Thorium Dioxide. *N. Ann. District of Columbia* 2: 279-282 (Dec.) 1933.

3 Enlargement and distortion of the fourth ventricle and aqueduct by a probable midline cerebellar tumor in a child (fig 5)

4 Backward displacement and compression of the fourth ventricle and aqueduct caused by an astrocytoma



Fig 2—Frontal view of ventriculogram shown in figure 1. Note the full outline of the lateral ventricles, the midline third ventricle, and the lozenge-shaped fourth ventricle and cistern. The lateral recesses are well shown.

springing from the base of the pons (figs 7 and 8). It is particularly in cases of lesions located in the region of the third and fourth ventricles that colloidal thorium



Fig 3—Obstruction of interventricular foramen (courtesy Dr. H. H. Kerr). H. C., a white man, aged 41, with a typical history of cerebral tumor, headache, vomiting, choked disk, with left hemiparesis. Moribund when operated on, died an hour later. Efforts to find the right ventricle failed, and 5 cc. of thorium dioxide sol was injected into the left ventricle. No filling of the right ventricle. The left ventricle was displaced outward. Necropsy revealed a huge glioma of the right basal ganglia, obliterating the right ventricle and occluding the interventricular foramen.

dioxide seems to find its greatest use, and when we have neglected the evidence they presented, we have usually been wrong. This was especially true in the case of

a man who presented cerebellar symptomatology and in whose ventriculogram there was a filling defect in the right lateral ventricle. On cerebellar exposure only a few adhesions were found about the calamus scriptorius. This patient secured relief but, we fear, only temporarily.

#### TECHNIC

The patient is preferably in the sitting or the prone position. Under aseptic precautions and with local anes-



Fig. 4—Lateral displacement of both ventricles. W. J., a Negro, aged 32, admitted to the Gallinger Hospital May 1, 1933, complained of stiffness of the neck since March 27. A month before he had been drunk for forty-eight hours and may have sustained a head injury. He had had syphilis ten years before, with two years' treatment and meningitis at 18 months. Two weeks after onset suboccipital headache developed on the right side and on April 25 diplopia. Vision began to fail six days later. Examination revealed choked disks to 6 diopters with exudate and hemorrhages on both sides. The tongue deviated to the right, corneal reflexes were diminished, tendon reflexes were absent and sense of position was reduced on the right side and diminished in the left toe. His gait was unsteady. The Romberg sign was positive, the Babinski negative. Examination of the spinal fluid, blood and urine and roentgenograms of the skull were negative. A ventriculogram made with thorium dioxide sol by Dr. Gaffney May 8 showed marked displacement of the ventricles to the right; the third and fourth ventricles were not seen. For two days the patient was restless, semistuporous and then improved. Operation was delayed, however, and the patient died May 18. There was no autopsy.

thesia, two burr holes are made opposite the posterior horns of the lateral ventricles and a ventricular needle is introduced first into one lateral ventricle and then into the other. When the fluid has ceased to flow a syringe containing 3 cc of colloidal thorium dioxide<sup>6</sup> is attached and fluid aspirated until the syringe is full. By back-and-forth movements of the piston the medium is mixed with the ventricular fluid and the whole mass reinjected. It is to be emphasized that during this procedure the patient is conscious of no discomfort. The procedure is repeated on the opposite side. In no case have we used more than 6 cc of the thorium dioxide. When the ventricle is found with difficulty and only a few drops of fluid are obtained it is still possible to

secure satisfactory roentgenograms, a fact that would be beyond the scope of the injection of air. The needles are withdrawn, the scalp wounds sutured and the patient removed to the x-ray table. The taking of satisfactory films is facilitated by the perfect cooperation usually possible on the part of the patient. Further films may be taken at intervals if desired, but the rapid elimination of the material from the ventricles in normal cases or its flocculation in cases of ventricular obstruction render further examination of dubious value.

#### FATE OF THE THORIUM DIOXIDE

From the standpoint of roentgenography, the injected material normally leaves the cranial cavity within four hours. Probably most of it is absorbed into the blood stream by way of the arachnoid villi. This was shown in one of our cases in which by mistake the thorium

was injected into the longitudinal fissure. Jacobi, Löhr and Wustmann<sup>7</sup> have shown that it also is discharged by way of the cranial and cervical lymphatics. The amount is too small to be visualized in its eventual location in the liver and spleen. In cases in which the ventricular system is obstructed and flocculation of the colloid takes place, the material is deposited in small masses or in a sheet along the ependyma, remaining there at least eleven days, as shown in one case. In the roentgenogram taken that day the outlines of the dilated ventricles appeared like distorted transparent balloons. Following the injection of colloidal thorium dioxide there is widespread diffusion of the material, as observed at necropsy. Even in the case in which it was injected by lumbar puncture, there were small granules of thorium dioxide in the meninges over the cerebral cortex. During the first twenty-four hours there is a mild leukocytic reaction, followed by a lymphocytic, but the type of cell predominating in the exudate is the phagocytic histiocyte. This cell appears in considerable numbers and engulfs a large quantity of the thorium dioxide (fig. 9). A certain amount of the material lies free in the meshes of the meninges and even six weeks after the injection may still be found lying, apparently inert in the subarachnoid spaces. In locations in which large quantities of the material are collected, such as the interpeduncular space, there is a certain amount of organized exudate with granuloma formation, but



Fig. 5—Filling defect in the fourth ventricle. D. C., a white boy, aged 5 years, admitted to the Children's Hospital Feb. 2, 1934, suffered from headache, restlessness and staggering with onset January 10. The preceding September he had suffered an attack of scarlatina, followed by repeated colds and an ascending peripheral neuritis from which he had recovered by Christmas time. Examination Jan. 24, 1934, revealed suboccipital tenderness, stiffness of the neck, diplopia, nystagmus and choked disks to from 4 to 5 diopters. The condition did not yield to dehydration and on February 3 ventriculography was performed. This was followed by vomiting and fever for two days and return of the paralysis of the limbs, but the symptoms gradually cleared and following irradiation he was sent home. The headaches disappeared, the choked disks subsided, vision returned and the limbs gradually regained power. Reexamination April 16, 1935, disclosed atrophy of the legs with absent reflexes, slight intention tremor in the upper limbs, normal vision and no nystagmus. The ventriculogram shows slight dilatation of the lateral ventricles and marked enlargement and distortion of the fourth ventricle with a scalloped filling defect in its lower portion.

apparently no plastic exudate with fibrin and scar formation. Leukocytes and plasma cells are absent, lymphocytes and fibroblasts are few, and the predominant cell

<sup>7</sup> Jacobi, Walter, Löhr, Wilhelm and Wustmann, Otto. Ueber die Darstellung des zentralen und peripheren Nervensystems im Röntgenbild. Leipzig: Johann Ambrosius Barth, 1934.



is the histiocyte. Phagocytes also appear on the ependymal surface, although their derivation from the ependymal cells as suggested by Alexander, Jung and Lyman<sup>8</sup> has yet to be proved. In any event, the small aggregates of thorium dioxide become penetrated by glia fibers, probably after the material has been phagocytized, and are then incorporated into the lining of the ventricle (fig 10). The ependymal lining seems to be permanently destroyed or perhaps overgrown in these places. In none of the four cases coming to necropsy has there been any invasion of the neural parenchyma by the thorium and in those cases in which the material was injected directly into the cerebral tissue there was very little reaction. Just what will be the fate of the thorium dioxide years after its intraventricular injection is impossible



Fig 6—D. C. fourteen months after the ventriculogram shown in figure 5. The boy was subjected to irradiation rather than to operation on suspicion that the filling defect in the fourth ventricle was due to a medulloblastoma.

to state, since up to the present time six weeks is the longest period between injection and necropsy.

#### COMMENT

Efforts to find a useful and safe method for delineation of the ventricular system by the x-rays go back to the original work of Dandy with air. Various investigators<sup>9</sup> have used solutions of the heavy metals in animals but have found them too irritating for application to man. Some French authors<sup>10</sup> and Castex and his co-workers<sup>11</sup> have used iodized oils, but Bruskin and Propper<sup>12</sup> found plastic meningitis and oleogranulomas following the subarachnoid injection of these substances. The only material forms globules that gravitate to the depths of the ventricular system but are too large to traverse the aqueduct unless it is considerably dilated. Nevertheless, Morea<sup>13</sup> has performed the injection in ninety patients, with two deaths and fairly satisfactory results. Colloidal thorium dioxide was first used in the subarachnoid space in man by Radovici and Meller<sup>14</sup> in France and by Jacobi and Lohr<sup>15</sup> and by

Wustmann<sup>15</sup> in Germany, but they observed that the material seldom or never penetrated into the ventricular system, however nicely it outlined the spinal cord. In the meantime Egas Moniz<sup>16</sup> turned from sodium iodide to thorium dioxide for the visualization of the arteries and veins of the brain. This technique is rather delicate and the interpretation sometimes difficult, although under proper conditions remarkable advances have been made, particularly in the study of vascular anomalies, aneurysms and hemangiomas. The displacement of the cerebral arteries by tumors is the criterion on which localization is based. The arteries of the cerebellum, however, are seldom revealed with any clarity.

#### SUMMARY

We believe that colloidal thorium dioxide is of great value as a contrast medium for ventriculography. It is freely miscible with the ventricular fluid, is of high specific gravity, finding its way into the recesses of the ventricular system, and on account of its high radioactivity needs to be used in relatively small amounts. It is eliminated, in normal cases, within four hours and is so inert that it provokes only a mild inflammatory reaction.

Most important of all it preserves the supporting fluid cushion of the brain and avoids the serious constitutional effects of air ventriculography.



Fig 7—Backward displacement and compression of aqueduct and fourth ventricle. W. G. a white boy aged 3 years admitted to the Children's Hospital Aug. 13, 1934, suffered from headache, vomiting and staggering with the onset a month previously. There was a history of three previous admissions for gastritis, two for concussion. Examination revealed fretfulness, bilateral choked disk to 4 diopters and separation of sutures. August 22 a ventriculogram with thorium dioxide sol was followed in a week by negative cerebellar exploration. There was a moderate reaction with gradually progressive spastic paralysis of all four limbs and death from inanition October 8. The ventriculogram reveals decided hydrocephalus. The fourth ventricle is displaced backward and is compressed. The aqueduct is stenosed.

We have used colloidal thorium dioxide for ventriculography in twenty cases, with two deaths and two

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10. Haguenau, and Gally. Exploration lipiodolée rachi-médullaire et crânio-cérébrale. *J. de radiol. et d'électrol.* 13: 369 (July) 1929. Arcé, J. Iodo-ventriculographie cérébrale. Endoscopie cérébrale et ventriculographie. *Bull. et mem. Soc. nat. de chir.* 58: 786 (May 21) 1932.

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12. Bruskin, J., and Propper, N. Experimentelle Myelo-Encephalographie an Hunden und über den Einfluss von Jodipin und Lipiodol auf das Rückenmark. *Gehirn und dessen Haute. Ztschr. f. d. ges. exper. Med.* 75: 34-55, 1931.

13. Radovici, A. and Meller, O. Essai de liquodigraphie cephalo-rachidienne. *Encephalomyelographie par le thorotrast sous arachnoïdien.* *Bull. Acad. de med. Paris* 107: 314 (March 1) 1932. *Encephalomyelographie par le thorotrast sous arachnoïdien et epidural. Recherches expérimentales.* *Compt. rend. Soc. de biol.* 109: 1382-1384 (May 6) 1932. *Encephalomyelographie liquidiennne.* *Presse med.* 40: 1933 (Dec. 21) 1932. Über eine neue Methode der Encephalographie. *Klin. Wchnschr.* 12: 429 (March 18) 1933.

14. Jacobi, Walter and Lohr, Wilhelm. Eine neue Methode zur Reliefdarstellung des Zentralnervensystems im Röntgenbild. *Deutsche Ztschr. f. Nervenh.* 130: 15, 1931.

15. Wustmann, O. Experimentelle Untersuchungen über die Reliefdarstellung (Umri-zeichnung) des Zentralnervensystems im Röntgenbild durch Thoriumkontrastmittel. *Deutsche Ztschr. f. Chir.* 238: 529, 1933.

16. Egas Moniz. *Angiographie cérébrale. Ses applications et résultats en anatomie, physiologie et clinique.* Masson & Cie Paris, 1934.

severe reactions. Our first patient is in his usual health twenty months after the injection.

**AUTHORS' NOTE.**—Since this paper was written, three further published articles on ventriculography with colloidal thorium dioxide have come to our attention. Jessen<sup>17</sup> reported "With thorotrast one can produce almost ideal ventriculograms but the material exerts some local irritation and the medium is still in the experimental stage." Villaca<sup>18</sup> used colloidal thorium dioxide four times by the cistern route in doses as high as 12 cc and obtained excellent pictures of the cerebral fissures and basal cisterna. Only occasionally did the material enter the ventricles but by direct ventricular puncture in one case he obtained satisfactory visualization of the ventricular system. There were some fairly severe reactions that did not persist. He also reported one injection directly into the ventricle. Twining and Rowbotham<sup>19</sup> obtained excellent visualization of the ventricular system and the patients suffered less severe reactions than would be anticipated following the injection of air.

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### ABSTRACT OF DISCUSSION

**DR TEMILE S. FAX**, Philadelphia. I am impressed with the dramatic appearance of this type of visualization of the ventricle from an anatomic and diagnostic standpoint. It seems at first glance to be an ideal method of diagnosis. The new method will require prolonged study in order to build up a sufficiently established and recognized basis for interpretation. The authors have pointed out one instance in which uncertainty in interpretation led to confusion in localization. The same problem has confronted ventriculography and encephalography, years of careful study having finally given an acceptable basis



Fig. 8—Astrocytoma of the base of the pons compare with figure 7

of interpretation. I am opposed to any material which injected into the subarachnoid or ventricular system is retained there or produces a more permanent reaction in the form of the granular mass that the authors have shown. They point out

17 Jessen H. Neurosurgical Methods for Diagnosis of Tumors of Brain and Spinal Cord. *Ugeskr. f. Læger* 95: 947-956 (Sept. 7) 1933.  
18 Villaca C. M. Ventriculography, Encephalography and Myelography with Thorotrast. *Rev. de neurol. e psychiat. de Sao Paulo* 1: 323-335 (April-June) 1935.  
19 Twining E. W. and Rowbotham G. F. Ventriculography with Opaque Injection. *Lancet* 2: 122-125 (July 20) 1935.

that in normal cases elimination of radiopaque substances occurs within four hours, but the very cases of ventricular obstruction or obstruction of the basal cisterna in which the use of a visualizing material is most desirable seem to contraindicate the use of thorium dioxide, in view of the reactions noted through irritation and the tendency toward deposition of this

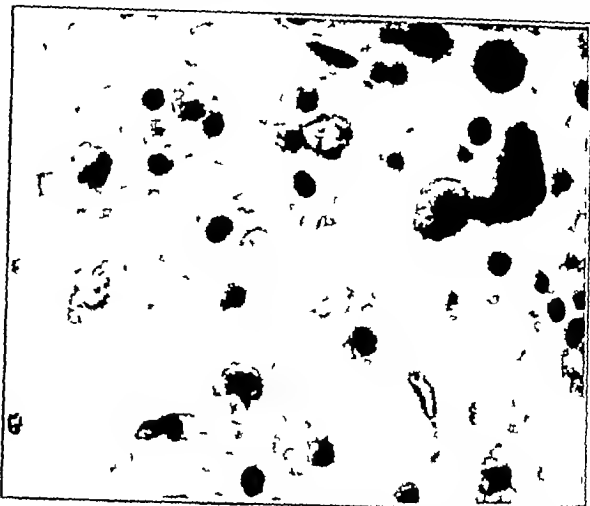


Fig. 9—Meningeal reaction to injection of thorium dioxide sol same case as in figure 7. Much of the colloidal thorium dioxide can still be found free in the subarachnoid spaces. Large quantities however are found within the cytoplasm of phagocytic histiocytes. A number of lymphocytes can be seen but no leukocytes and little fibrous tissue.

material in the ventricular walls when elimination is impossible because of obstruction. Ventriculography and encephalography have their place. I believe that it is a mistake to use a ventriculogram when an encephalogram will suffice. My experience has not included thorium and I have been interested in watching the demonstrations of Dr. Freeman and Dr. Schoenfeld. Is there any evidence in these patients, following thorium injection, of an irritative phenomenon of basal meningitis or a type of irritation that might be interpreted as prolonged irritation?

**DR. R. GLEN SPURLING**, Louisville, Ky. I became intrigued with the possibility of thorium dioxide as a means of visualizing the cerebrospinal fluid spaces some two years ago. Every dog that was injected with the drug intracisternally died within a few hours, either in convulsions or in a state of decerebrate rigidity. The subarachnoid space however, and the ventricular system were well visualized. Apparently the damage to the medullary and cortical structures was due to toxicity of the drug since death ensued when the drug had been injected in sufficient concentration to visualize the system. In my experience, this drug is far more dangerous than air when used within the cerebrospinal fluid spaces of experimental animals. From the experience of Dr. Freeman and his associates, the reactions following this type of ventriculography are perhaps no more hazardous than with pneumoventriculography. However, their series of cases is still too small to justify a statistical comparison. Air studies have shown that the risk to life from the procedure is greatly decreased by prompt operative intervention. When this is not feasible, continuous drainage of the ventricle through an indwelling cannula while one is waiting for the operative procedure minimizes the danger. If such drainage is instituted before the drug has been flocculated over the ventricular linings, perhaps it would be discharged completely before the flocculation occurs. Probably many of the bad effects of ventriculography have been due to the rather sudden variations in the degree of intracranial pressure. The practical value of visualizing the aqueduct in cases of pontile tumor might be questioned. Furthermore, this visualization of the aqueduct and fourth ventricle may be done in the absence of complete obstruction by pneumoencephalography as has been shown by Dike and others. The reported toxicity of the drug coupled with my experience in the experimental laboratory would still make me hesitant in using it clinically. Yet, air as a medium for ventriculography cannot in my experience

produce such perfect ventriculograms as we have seen today. If further experience with this drug should prove it to be as innocuous as air, I feel that the value of ventriculography in diagnosis would be greatly enhanced.

DR. TRACY J. PUTNAM, Boston. Following Dr. Freeman's preliminary report I have used his method in three cases, and the results are unquestionably superior to those furnished by the injection of air. From these three cases I should judge that thorium dioxide is not substantially more irritating than air—perhaps not as irritating. The statistics of Dr. Freeman and his associates are better than most series of ventriculography with air. They have a lower mortality. I think that most of us will agree that the ideal substance for ventriculography has yet to be discovered. After seeing these histologic preparations and also those of Dr. Leo Alexander of my department it is hard to believe that thorium dioxide is entirely ideal, for certainly there is a substantial inflammatory or pseudo-inflammatory reaction in the ventricular walls. I think that this is more striking under the microscope than it is from the biologic point of view. Thorium dioxide appears black in microscopic sections, and one is sometimes prejudiced against what one cannot see and does not appreciate the damage that is done by invisible agents. Sufficient data are lacking to demonstrate which is preferable for routine use, air or thorium dioxide. One important advantage of the latter is that its use obviates the necessity of alternately pumping out fluid and pumping in air, a form of massage that is distinctly dangerous. The danger of sustained damage is probably small compared to the other risks that constitute the indications for ventriculography in most conservative clinics. One is usually faced with an emergency and perhaps should not pay too much attention to possible dangers many years hence. We must cross our bridges as we come to them. There is one situation in which I feel entirely certain that thorium dioxide is superior to air, and that is when the needle encounters only a small collection of fluid, so small that the bubble of air would be entirely invisible in the plates. Under these circumstances thorium dioxide will often cast a useful shadow. The authors have introduced a valuable technic, and it may have a great future.

DR. HANS REESE, Madison, Wis. I used thorium dioxide in a small number of cases for cerebral arteriographic studies but was not satisfied with the results. Then, on hearing Dr. Freeman's preliminary report and on his recommendation I used it again for ventricular studies. I have had no unpleasant reactions. Thereupon I used it for the determination of "blocks" in the spinal canal. If given by the cisternal route it does not cast a definite shadow, and I believe that if one has to resort to myelography the old method with iodized oil is superior for outlining tumors or arachnoid adhesions. The caudal sac may be visualized by 3 cc. of thorium dioxide administered by lumbar puncture. The advantage of this colloidal substance is its rapid disappearance from the spinal canal without cord or nerve irritations. Thorium dioxide injections into the cisterna magna affects the individual systematically, but I have not observed any pleocytosis which I always encounter after iodized oil. I have used thorium dioxide in outlining cerebral and arachnoid cysts. The different chambers of a cyst are clearly visualized thus demonstrating to the surgeon the actual size and form of the cyst in the brain as well as in the cerebellum. From 3 to 6 cc. of thorium dioxide is without irritation to the ependyma, brain substance and meninges; it does not affect the blood-forming centers. I recommend the use of thorium dioxide in ventriculography as demonstrated by the authors.

DR. H. H. SCHOENFELD, Washington, D. C. Thorium dioxide solution requires very complete mixing with the cerebrospinal fluid. After the brain needle is introduced into the ventricle the syringe should be ready to be applied to the needle and we mix the solution and cerebrospinal fluid back and forth gently several times. It has been our experience that the same patient has much less reaction both objectively and subjectively to the use of thorium than he does to air. The same patient having had an encephalogram with air followed by a ventriculogram made with thorium dioxide will say that he was much less uncomfortable and that if it is

necessary, he will permit another cerebral tap but that he would rather die than be stuck in the back again. The patients, as a group, show less febrile reaction, vomiting, shock and complaint of headache than the average patient with air either in the ventricles or by the spinal route and the reaction appears to be reduced about 50 per cent. One patient, for instance, being very badly crippled for ten days following an encephalogram was up and about and discharged from the hospital on the fourth day following the ventriculogram.

DR. CLAUDE MOORE, Washington, D. C. I have had an opportunity of making a fair number of encephalograms using air and I have made several, with my associates using air and thorium dioxide. In my opinion when encephalograms are made using air as a contrast medium the pathologic condition must be fairly well advanced before a definite diagnosis can be made. The contrast is so indefinite that a considerable quantity of air must be present in the enlarged cerebral spaces. The patients cooperate very poorly because of the pain. It is difficult to get them to hold still, and therefore the quality of the films is not sufficiently good in detail to establish one's opinion. In no other field of roentgenology is a good quality of roentgenogram so necessary. When thorium dioxide is used as a contrast medium and local anesthesia the patient is much more cooperative. I should like to see more physicians doing this type of work and using thorium dioxide as a contrast medium. The results should be equally good.

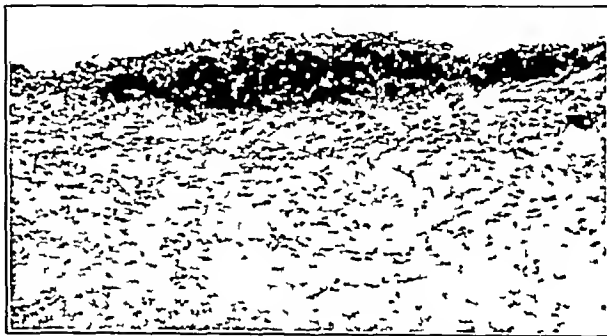


Fig. 10.—Ependymal reaction to injection of thorium dioxide sol. same case as in figure 9. Following injection in cases with ventricular obstruction the thorium dioxide flocculates and is deposited in small masses or sheets on the ependyma. Here it is engulfed by phagocytes and incorporated into the ventricular wall by glia reaction. The ependyma appears to be destroyed. From the wall of the third ventricle six weeks after ventriculography.

DR. WALTER FREEMAN, Washington, D. C. In answer to Dr. Putnam concerning the cases in which only a few drops of fluid can be drawn and an air ventriculogram would be out of the question I wish to say that the injection of a little colloidal thorium dioxide is an ideal method. That is the way we happened to try it. We had a case from which we obtained only fifteen drops of fluid. We tried the thorium dioxide and got a very satisfactory visualization of the whole ventricular system. The point brought out by Dr. Spurling, that the ventricles should be drained following the injection of the colloidal thorium dioxide, I think is good. It has only recently come to our attention that the little balls of colloidal thorium were clinging to the ependyma. If there is no obstruction they can be washed out easily. If there is obstruction they should be drained by an indwelling cannula until the ventricle is evacuated satisfactorily.

**Soreness of the Breasts**—Quite a number of normal women notice a little soreness about the breasts at the time of menstruation and even at times an occasional shooting pain. This in itself need cause no concern. The breasts are under the influence of the same ovarian hormones which produce menstruation; they undergo cyclical changes very much as does the mucous membrane of the uterus and at times there may be produced a greater or less degree of breast soreness or pain.—Novak, Emil. *The Woman Asks the Doctor*. Baltimore: Williams and Wilkins Company, 1935.

# PRESSOR AND OXYTOMIC FRACTIONS OF POSTERIOR PITUITARY EXTRACT

COMPARATIVE EFFECTS ON BLOOD PRESSURE  
AND INTESTINAL ACTIVITY

K. I. MELVILLE, M.D.  
MONTREAL

The preparations of posterior pituitary extract are assayed for pressor potency on the basis of the effects observed on the blood pressure of the dog under chlorbutanol anesthesia. In the nonanesthetized animal, however, it has recently been shown that the intravenous injection of these preparations leads to quite variable blood pressure responses.<sup>1</sup> Since posterior pituitary extract is recommended for use in the treatment of shock and paralytic ileus in man, it is of interest to know how the pressor-assayed strengths of different preparations, as determined on the anesthetized animal, correspond quantitatively with the actions observed on the blood pressure and intestine when the complicating factor of the anesthetic is eliminated. Apart from this practical significance, such a comparison is of value in determining whether or not these effects of the extract are due to one and the same or to different constituents.

In order to obtain the desired data, two pairs of pressor and oxytomic preparations obtained by different chemical procedures have been compared for their actions on the blood pressure and the intestinal activity of the normal unanesthetized dog. The preparations studied were pitressin and pitocin which are commercial preparations of Parke, Davis & Co., and postlobin-V, or the pressor fraction and postlobin-O, or the oxytomic fraction, which are laboratory preparations obtained by a method recently described by Stehle.<sup>2</sup> In some experiments pituitrin, the commercial unfractionated extract of Parke, Davis & Co., was also used.

## HISTORICAL

The only previously published comparisons of the effects of posterior lobe preparations on the blood pres-

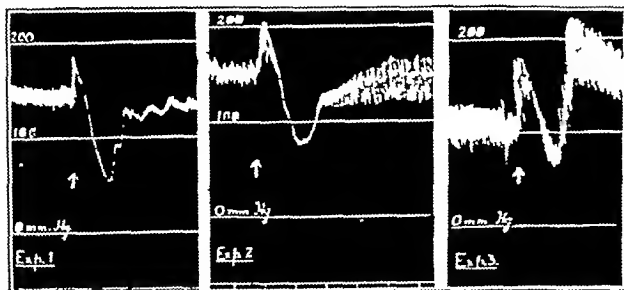


Fig. 1—Blood pressure tracings. In this and each succeeding tracing the time is recorded in minutes. Local anesthesia with 0.5 per cent procaine hydrochloride was used and all injections were made intravenously. Experiment 1—Dog male weight 9.2 Kg. 1 pressor and 0.05 oxytomic unit of the pressor fraction per kilogram were injected. Experiment 2—Dog male weight 11 Kg. 1 pressor and 0.05 oxytomic unit of the pressor fraction per kilogram were injected. Experiment 3—Dog female, 1 pressor and 0.05 oxytomic unit of pitressin per kilogram were injected.

sure of the unanesthetized dog, as far as I am aware, are those of Gruber,<sup>3</sup> who employed pitressin, pitocin and pituitrin. He concluded that pitressin caused a fall

in blood pressure, while pitocin led to variable effects and pituitrin produced a rise in blood pressure. No explanation for these differences in action was offered, and the comparisons were not extended quantitatively. Gruber and Robinson<sup>4</sup> have also compared the effects of these preparations on the intestinal activity of the unanesthetized animal. They employed dogs with Thury-Vella fistulas of the ileum and found that following the intravenous injection of each preparation relaxation was observed. Quigley and Barnes<sup>5</sup> have also studied the effects of pitressin and pitocin on

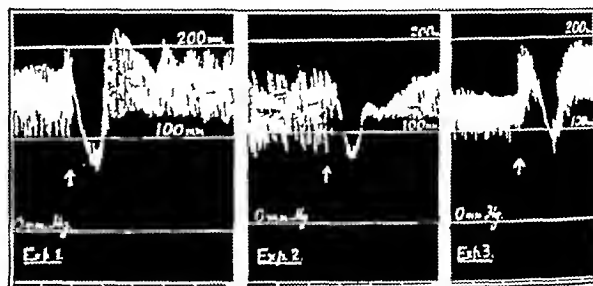


Fig. 2—Blood pressure tracings. Experiment 1—Dog female weight 7.4 Kg. Experiment 2—Dog female weight 15.8 Kg. Experiment 3—Dog female weight 14.6 Kg. In each experiment 1 pressor and 1 oxytomic unit of pituitrin per kilogram were injected.

dogs with fistulas of the stomach, small intestine and colon, and found similar inhibition. There are no other studies on this question, except some recently published experiments from our own laboratory,<sup>6</sup> which I shall refer to later.

## METHODS

Dogs were used throughout the study.

In the experiments on blood pressure, the skin and subcutaneous tissues overlying the femoral artery were infiltrated with from 5 to 10 cc of 0.5 per cent procaine hydrochloride. When local anesthesia was established, the artery and vein were exposed and the former was cannulated for recording the blood pressure. Five per cent sodium citrate was used as an anticoagulant. All injections were made into the femoral vein, and in comparative experiments equal volumes of solution were always used. Usually a single injection was made in each animal because of the slight response that follows a second or third injection of the extract in the unanesthetized animal. In some experiments, however, intervals of from one to four hours were allowed to elapse between two injections. More than a second injection was never carried out on the same animal.

In the experiments on intestinal activity, either the animals were simply injected intravenously, turned loose in the laboratory and observed, or roentgenograms of the intestine were taken before and after intravenous injection of the substance to be studied.

All the preparations employed have been assayed by the usual methods from time to time in this laboratory and may be considered to have the following degrees of activity: pitressin and the pressor fraction contain in each case 95 per cent of blood pressure raising or pressor activity and 5 per cent of uterine stimulating or oxytomic activity; pitocin and the oxytomic fraction contain in each case 95 per cent of oxytomic and 5 per cent of pressor activity and pituitrin contains 50 per cent of pressor and 50 per cent of oxytomic activity.

From the Department of Pharmacology, McGill University Faculty of Medicine.

Read before the Section on Pharmacology and Therapeutics at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

1 (a) Gruber, C. M. J. Pharmacol. & Exper. Therap. 36: 155 (June) 1929. (b) Melville, K. I. *ibid.* 47: 355 (March) 1933.

2 Stehle, R. L. J. Biol. Chem. 102: 573 (Oct) 1933.

3 Gruber, C. M. and Robinson, P. I. J. Pharmacol. & Exper. Therap. 36: 203 (June) 1929.  
4 Quigley, J. P. and Barnes, B. O. Am. J. Physiol. 95: 7 (Oct) 1930.  
5 Melville, K. I. and Stehle, R. L. Pharmacol. & Exper. Therap. 50: 165 (Feb) 1934.

## COMPARATIVE EFFECTS OF PITUITARY PREPARATIONS ON BLOOD PRESSURE

In figures 1, 2 and 3 are shown several examples of blood pressure curves obtained when theoretically equal quantities of the pressor constituent, as contained in different preparations, were injected intravenously. In the experiments shown in figure 1, 1 pressor unit per kilogram of the pressor fraction (experiments 1 and 2) and 1 pressor unit per kilogram of pitressin (experiment 3) were given. In each instance there was a slight rise of pressure, followed by a sudden and more or less prolonged fall below the normal level. These are typical effects of pressor pituitary preparations under such conditions.<sup>1</sup> In figure 2, however, in which pituitrin was used, the depressor responses from like doses of the pressor constituent (1 pressor unit per kilogram) were much less marked, generally speaking, although occasionally, as shown in experiment 3, a result not very different from the curves shown in figure 1 may be obtained. Pituitrin contains equal ratios of pressor and oxytocic activities, so that 1 oxytocic unit per kilogram was also simultaneously injected in these experiments. When, however, an equal quantity of pressor constituent was administered by injecting the oxytocic preparation, the results obtained were quite different. As shown in figure 3, there was no important change in the blood pressure

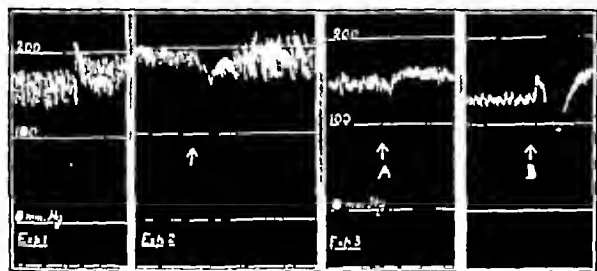


Fig 3—Blood pressure tracings. Experiment 1—Dog female weight 12.6 Kg. Experiment 2—Dog female weight 4.2 Kg. In experiments 1 and 2 20 oxytocic units and 1 pressor unit of oxytocic fraction per kilogram were injected. Experiment 3—Dog male weight 11.2 Kg. At A 20 oxytocic units and 1 pressor unit of the oxytocic fraction per kilogram were injected and at B one hour later 1 pressor unit and 0.05 oxytocic unit of the pressor fraction per kilogram were given.

curve in the three experiments described. On the basis of assayed pressor strengths, each of the injections of oxytocic activity should have produced quantitatively identical results to those shown in figures 1 and 2. This was not the case. In experiment 3, furthermore, when an identical pressor dose of the pressor fraction was injected one hour after the first injection, a decided fall of blood pressure resulted. It is thus obvious that in the unanesthetized dog equal pressor-assayed unitary dosages of whole posterior pituitary extract (pituitrin), pressor preparations (pitressin and the pressor fraction) and the oxytocic fraction lead to different quantitative blood pressure effects.

In figures 4, 5 and 6 may be seen some examples of similar results with larger but still equivalent pressor amounts of the different preparations. It was hoped thereby that any inherent differences in the actions of the two constituents on blood pressure might be further exaggerated. In figure 4 are shown results of two experiments in which two pressor units of pituitrin per kilogram of animal was injected. The resultant dips in blood pressure are decidedly less than were those shown in the experiments recorded in figure 2, in which only one half of this dosage of pressor constituent was employed. Since 2 oxytocic units per kilo-

gram was also present in the material injected in the later experiments, the diminished blood pressure response may be due to this substance. As a matter of fact the blood pressure responses observed when these dosages of pituitrin were used agreed well with those obtained when a mixture of equivalent dosages of either pitressin and pitocin or the pressor and oxytocic fractions were injected. This is shown in

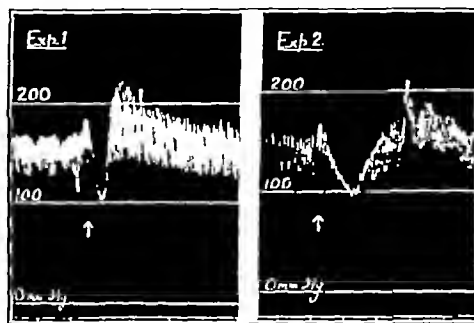


Fig 4—Blood pressure tracings. Experiment 1—Dog female weight 7 Kg. Experiment 2—Dog female, weight 4.5 Kg. In each experiment 2 pressor and 2 oxytocic units of pituitrin per kilogram were injected.

figure 5, experiments 1 A and 2 A. The oxytocic constituent is therefore probably responsible for this antagonistic action. In each of these experiments, also, four hours after the first injections, 2 pressor units per kilogram of the pressor fraction and of pitressin, respectively, led to typical intense depressor effects (experiments 1 B and 2 B), so that the failure to obtain this type of response after the first injection is certainly not due to individual animal variations. The effect of an initial injection of a like dose of pitressin in another animal is shown in figure 6 (experiment 1) and here it may be seen that the degree of the depressor response is much greater than that obtained in the earlier experiments in which half of this dose was employed (fig 1). The depressor effect observed in the unanesthetized dog is probably due, therefore, to the pressor-assayed hormone.

In experiment 2, figure 6 is shown an example of the result obtained when as large a dose as 3 pressor units per kilogram of extract was injected, in the presence, however, of at least 20 oxytocic units per kilogram. The depressor effect did not appear, but there was marked evidence of cardiac embarrassment as shown in the wavelike fluctuations of the pulse pressure which lasted from twenty to thirty minutes.

The presence of the oxytocic constituent did not therefore abolish the action of the extract on the heart.

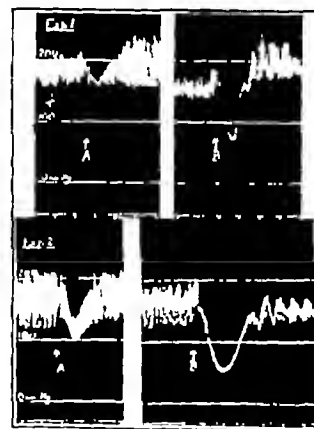


Fig 5—Blood pressure tracings. Experiment 1—Dog male weight 9 Kg. At A a mixture containing 2 pressor units and 0.1 oxytocic unit of the pressor fraction per kilogram and 2 oxytocic units and 0.1 pressor unit of oxytocic fraction per kilogram were injected. At B four hours later 2 pressor units and 0.1 oxytocic unit of the pressor fraction per kilogram were injected. Experiment 2—Dog weight 7.5 Kg. At A a mixture containing 2 pressor units and 0.1 oxytocic unit of pitressin per kilogram and 2 oxytocic units and 0.1 units or unit of pitocin per kilogram were injected. At B four hours later 2 pressor units and 0.1 oxytocic unit of pitre in per kilogram were injected.



Further confirmation of this has been obtained by comparing the effects of 10 pressor units of the pressor fraction with those of 200 oxytocic units of the oxytocic fractions (equivalent to 10 pressor units) the heart-lung preparation of Starling being used. In both experiments performed the cardiac output was reduced approximating 50 per cent in each instance. It is thus

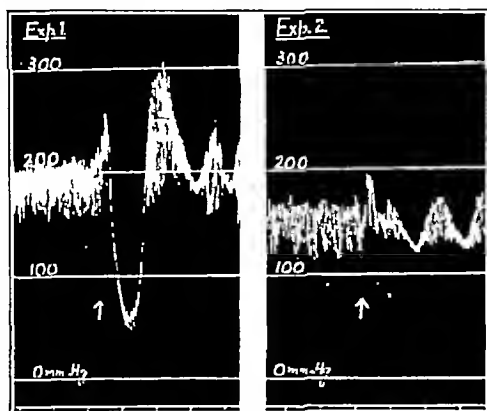


Fig. 6—Blood pressure tracings. Experiment 1—Dog male weight 8.4 Kg. Two pressor units and 0.1 oxytocic unit of pitressin per kilogram were injected. Experiment 2—Dog male weight 5.4 Kg. A mixture containing 20 oxytocic units and 1 pressor unit of oxytocic fraction and 2 pressor units and 0.1 oxytocic unit of the pressor fraction per kilogram were injected.

clear that this antagonistic blood pressure action of the oxytocic hormone is not due to neutralization of the coronary constriction, which the pressor hormone is well known to produce in the heart and which, as has been shown,<sup>1b</sup> may be abolished by coronary dilator agents such as ephedrine or epinephrine.

In view of these results it is natural to inquire whether the oxytocic constituent per se exerts any action on the cardiovascular system in the anesthetized animal. In this connection some observations recorded in the literature are of interest. Gaddum<sup>6</sup> states that the rise in blood pressure produced by large doses of pitocin in the dog under chloralose anesthesia is more prolonged than that due to small doses of pitressin, so that it seems possible that this is an effort of the oxytocic principle itself and is not due to imperfect

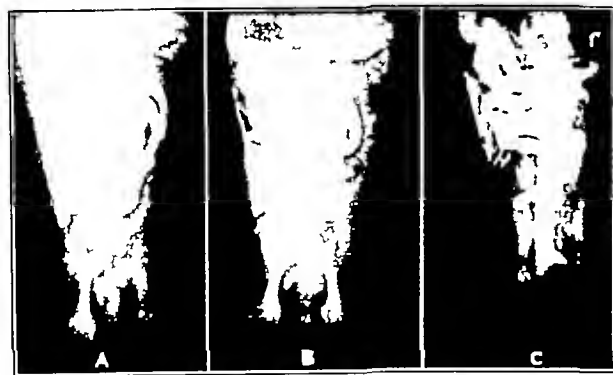


Fig. 7—Roentgen appearance of dog weight 6.7 Kg. At 10 a. m. 100 Gm of barium sulfate in suspension was given by stomach tube. At 12 noon A was taken. Five minutes later 1 cc. of the pressor fraction (10 pressor units and 0.6 oxytocic unit) was injected intravenously. At 12:10 p. m. B was taken and at 12:15 p. m. C.

separation of the two principles. Gaddum gives no data, however. Stehle<sup>2</sup> has also observed that in the chlorbutanolized dog the blood pressure curve obtained by a uterine preparation (oxytocic fraction or pitocin)

even in small dosages, was quite unlike that of the pressor substance (pressor fraction or pitressin). In the urethanized fowl, Gaddum<sup>7</sup> and Morash and Gibbs<sup>8</sup> found that pitocin produced a greater fall in blood pressure than pitressin, and recently Holtz<sup>9</sup> has shown that this action is due to the oxytocic constituents. This investigator also reports a curious observation concerning the action of the oxytocic constituent on the rate of venous outflow from the perfused livers of cats and dogs. The venous outflow from the perfused liver of the dog is augmented through an action of the oxytocic hormone but that of the cat is unaffected. Without considering the explanation offered for this action in the dog, it is of interest to speculate as to how such an action could influence the blood pressure level as a whole. It is conceivable that, were the venous outflow from the liver sufficiently increased, the heart might act rather passively and an increased cardiac output result. If this occurred, the absence of the fall in blood pressure due to the pressor principle, even when its deleterious cardiac action is not abolished

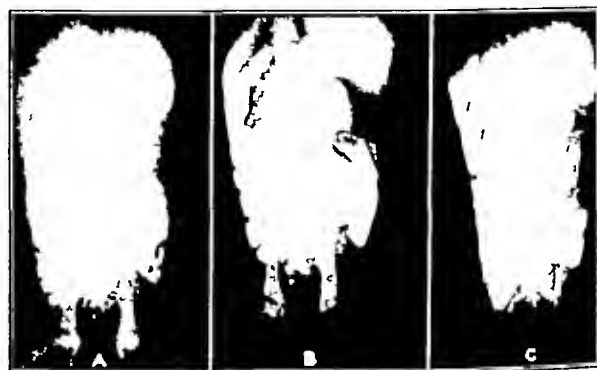


Fig. 8—Roentgen appearance of dog weight 6.6 Kg. At 9:45 a. m. 100 Gm of barium sulfate in suspension was given by stomach tube. At 11:45 a. m. A was taken. Five minutes later 1 cc. of the oxytocic fraction (10 oxytocic units and 0.25 pressor unit) was injected intravenously. At 11:55 a. m. B was taken and at noon C.

might be due to this action. The point, however, requires further study.

#### COMPARATIVE EFFECTS OF PITUITARY PREPARATIONS ON INTESTINAL ACTIVITY

**General**—If either pressor or oxytocic fractions are injected intravenously in dogs in dosages of 1 pressor or 1 oxytocic unit per kilogram and the animal is let loose in the room, defecation occurs in nearly every instance.<sup>5</sup> Following the pressor fraction or pitressin the interval between the injection and defecation varies usually from five to fifteen minutes, and there is marked unsteadiness, extreme pallor of the mucous membranes and even collapse of the animal. More or less frequently vomiting or retching occurs, even though the stomach contains no food. Before the effect is over, the animal makes several successful or unsuccessful attempts to defecate, and the stools become extremely liquid and may even contain visible blood.

In the case of the oxytocic fraction or pitocin, when 1 oxytocic unit and 0.05 pressor unit per kilogram are employed the animal usually defecates only once within two or three minutes after the injection, and there is no other visible effect. When a large dose of oxytocic fraction<sup>10</sup> (50 oxytocic units per kilogram) was injected, there appeared generally only slight pallor and

<sup>7</sup> Gaddum J. H. *J. Physiol.* 65: 434 (Aug.) 1928.

<sup>8</sup> Morash R. and Gibbs O. S. *J. Pharmacol. & Exper. Therap.* 37: 475 (Dec.) 1929.

<sup>9</sup> Holtz P. *J. Physiol.* 76: 149 (Oct.) 1932.

<sup>10</sup> Preparation 817 containing 2 per cent of pressor assayed potency.

unsteadiness and one out of three animals thus injected defecated once. Considering that this injection contained the equal of 1 pressor unit per kilogram also, the general effects observed were rather slight. The same animals four hours later showed typical unsteadiness, collapse and diarrhea after an injection of 1 pressor unit per kilogram of the pressor fraction. The oxytocic constituent appears, then, to antagonize these general effects also.

*Actions as Shown by Roentgen Rays*—In figures 7 and 8 are reproduced roentgenograms taken before and after injections of the pressor and oxytocic fractions in dosages of approximately 1 pressor unit and 1 oxytocic unit per kilogram, respectively. After the injection of the pressor fraction the margins of the intestine are crenated and give clear evidence of constriction. The barium sulfate has also been propelled into the colon, which has become distinguishable (fig. 7 C), and shortly thereafter the dog defecated. After the oxytocic fraction a different appearance is seen (fig. 8). Here the intestine appears bandlike and shorter, as though the circular muscle had relaxed but the longitudinal contracted. No exact quantitative observations on this point have been made, but it appears at present that under the conditions employed both pressor and oxytocic constituents exert characteristic effects on the intestine, and these appear further to be antagonistic in character.

#### SUMMARY

It is shown that the blood pressures and intestinal actions of pituitary (posterior lobe) extract, injected intravenously in the unanesthetized dog, vary markedly with the fraction used, even when equal pressor assayed dosages are employed.

The presence of the oxytocic hormone may inhibit or abolish the typical effects of the pressor constituent.

It is thus concluded that the pressor hormone per se causes under such conditions a fall of blood pressure, stimulation of intestinal activity, and defecation, while the oxytocic constituent per se in sufficient dosages exerts a definite antagonistic influence in respect to these actions.

These observations may explain some of the conflicting reports on the clinical usefulness of the agents in question.

#### ABSTRACT OF DISCUSSION

DR. D. ROY McCULLAGH, Cleveland. My interest in this field has been confined mostly to the anterior lobe of the pituitary gland. The study of any portion of the pituitary is sufficiently confusing to make one hesitant in expressing any very definite opinions along these lines. The opinion of clinicians is certainly at variance with regard to the efficacy of the use of the pressor principle, but many definitely feel that when it is used in intestinal distention, they get an effect which one would expect from the slides just shown by Dr. Melville. Dr. Black of Kansas City describes cases at operation in which the intestine is so distended that it protrudes from the incision and makes closure very difficult. If the pressor is used in those circumstances he states that the intestine contracts and goes back into the abdominal cavity, so that closure is simplified. The apparently conflicting views with regard to the effect on blood pressure must have some very definite explanation. I should like to ask Dr. Melville whether or not it is his opinion that the rate of injection or the mode of injection of the pitressin influences the apparent depressing action of the pressor principle. Generally speaking when the pressor principle is used in gastrointestinal distention clinically, the blood pressure shows a definite increase. It would seem possible that if the material is injected intravenously, a large quantity of it reaches the heart before it is generally distributed throughout the circulation and there might be sufficient vasoconstriction in the heart to

cause a serious drop in blood pressure, in fact, it has been demonstrated definitely that vasal depressants or pitressin cause diminution of the minute volume output of the heart and that the pressor effect is a matter of relationship between distal vasal constriction and a vasal constriction in the heart which decreases the blood output.

DR. KENNETH I. MELVILLE, Montreal. With reference to the influence of the rate and the mode of injection on the blood pressure response to these preparations, I would say that there is little evidence that these play any essential part and from the point of view of comparison I have not been able to obtain very definite comparative effects when these extracts are administered by any other channel than intravenously for the reason perhaps that the absorption is rather irregular, and I think that results which are obtained following subcutaneous injections are really too irregular to be interpreted too rigidly in this respect. Concerning the action of the pressor preparation on the heart, the experiments in which the heart-lung preparation was used have shown very definitely that this antagonistic effect of the oxytocic hormone is not due to a neutralization of the coronary constriction which is produced by the pressor principle, because 200 oxytocic units of an oxytocic fraction, which contains as contamination 10 pressor units, constricted the coronary circulation to the same extent as did 10 pressor units of a pressor preparation. I believe, therefore, that this difference in the effects of the two sets of preparations is probably due to an action on the liver, which has been described by Holtz who has shown that the oxytocic constituent increases the outflow of blood from the liver when the liver is perfused under certain conditions. How this may influence the peripheral blood pressure is a matter for further study.

## THE DECREASING PREVALENCE OF SYPHILIS IN MASSACHUSETTS

N. A. NELSON, MD

BOSTON

There is a certain beneficial psychologic reaction to knowledge that progress is being made in the solution of a problem. The more difficult the solution, the greater the satisfaction and the more powerful the urge to finish a job well begun. Syphilis is so prevalent and the problem of its control is so surrounded by obstacles, that any real evidence that it is decreasing in prevalence will be welcomed by everybody.

It is with particular pleasure that the Massachusetts Department of Public Health presents data which indicate real progress. Reports from other sections of the country invariably strike a most pessimistic note. It may be that if the situation should be studied in greater detail, the outlook might be more encouraging than when seen only from the point of view of gross case reports.

Evidence of a decreasing prevalence of syphilis in Massachusetts is available from three major sources: (1) from reports of antepartum clinics, (2) from monthly reports of syphilis clinics, and (3) from reports by clinics, physicians and institutions, to this department of cases of syphilis.

#### EVIDENCE FROM ANTEPARTUM CLINICS

In 1923 Hinton<sup>1</sup> reported his study of the Wassermann reaction in pregnancy. His report concerned the serologic reactions of 10,427 pregnant women for the five-year period from 1915 to 1919. His observations are summarized in table 1. It appears that 4.2 per cent of these women had positive and 3.9 per cent had doubtful Wassermann reactions.

From the Massachusetts Department of Public Health.  
<sup>1</sup> Hinton, W. A. The Wassermann Reaction in Pregnancy. *Am. J. Syph.* 155 (Jan.) 1923.

Hinton makes the important observation that the blood specimens from the New England Hospital for Women and Children were taken from the "placental end of the umbilical cord after delivery" and that the results in these cases "agree with the observations of others that 'cord blood' is only about one-third as effective in the detection of syphilis by the Wassermann test as that obtained by the usual venous puncture"

TABLE 1—*Wassermann Results in 10,427 Cases of Pregnancy*

|   | Total  | Positive   |             | Doubtful   |             | Negative   |             |
|---|--------|------------|-------------|------------|-------------|------------|-------------|
|   |        | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent |
| Boston Lying In Hospital                        | 7,121  | 372        | 5.2         | 233        | 4.0         | 6,396      | 89.7        |
| Florence Orfitenton Home                        | 264    | 11         | 5.0         | 16         | 0.0         | 237        | 89.6        |
| Lowell Corporation Hospital                     | 370    | 9          | 2.4         | 5          | 1.3         | 356        | 90.2        |
| New England Hospital for Wo<br>men and Children | 2,672  | 41         | 1.6         | 31         | 1.1         | 2,600      | 97.5        |
| Totals  | 10,427 | 433        | 4.2         | 403        | 3.0         | 9,589      | 91.0        |

Since the later series of tests which are to be discussed were made in antepartum clinics, it will be reasonable to exclude the 2,672 cord blood tests from Hinton's series. The remaining 7,755 tests produced the results given in table 2.

Thus, in a more nearly comparable group, 99 per cent of 7,755 pregnant women had positive or doubtful blood Wassermann reactions.

Early in 1935 the department requested reports from the twenty-three antepartum clinics in the state (of which it could find record) as to the number of positive and doubtful tests for syphilis in pregnant women during the five years from 1930 to 1934. Replies were received from nineteen, and data from sixteen of the twenty-three clinics. These sixteen clinics have performed serologic tests as a routine for from one year to the entire five years. During the time that tests have been made, the sixteen clinics had admitted 17,624 pregnant women. The results of these tests are summarized in table 3.

These figures (exclusive of the New England Hospital tests in Hinton's study) indicate a reduction of

TABLE 2—*Results with Exclusion of Cord Blood Tests*

| Total | Positive |          | Doubtful |          | Negative |          |
|-------|----------|----------|----------|----------|----------|----------|
|       | Number   | Per Cent | Number   | Per Cent | Number   | Per Cent |
| 7,755 | 392      | 5.1      | 374      | 4.8      | 6,989    | 90.1     |

TABLE 3—*Wassermann (or Hinton)\* Tests in 17,624 Cases of Pregnancy*

|   | Total  | Positive   |             | Doubtful   |             | Negative   |             |
|---|--------|------------|-------------|------------|-------------|------------|-------------|
|   |        | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent |
| Sixteen antepartum clinics  | 17,624 | 262        | 1.5         | 197        | 1.1         | 17,165     | 97.4        |
| Compare Hinton's study<br>(Excluding New England Hos-<br>pital tests) | 10,427 | 433        | 4.2         | 403        | 3.9         | 9,589      | 91.0        |
|   | 7,755  | 392        | 5.1         | 374        | 4.8         | 6,989      | 90.1        |

\* Hinton tests performed at state laboratory in place of Wassermann beginning April 1, 1934.

70.5 per cent in positive and of 76.7 per cent in doubtful reactions, and thus in spite of the fact that, for nine months of 1934, a much more sensitive test (the Hinton test) has been employed. If the New England Hospital tests are included, the reduction is still 64.3 per cent in positive tests and 70.9 per cent in doubtful tests. Certainly it is reasonably safe to say that there is

considerably less than half as much syphilis in pregnant women today as there was fifteen years ago.

Analysis of the reports of the fifteen clinics that reported their results by years indicates a definite decline in prevalence of syphilis in pregnant women, year by year, over even that short period (table 4).

Unfortunately, either no reply was received or the figures were not available from the two largest Boston clinics. However, the Massachusetts Society for Social Hygiene, jointly with this department, studied the antepartum records of these two institutions for the three years 1928, 1929 and 1930. In making this study, not only the blood tests but also any other evidence of record that indicated infection with syphilis was considered in the classification of the patient. The results of this study, as yet not published,<sup>2</sup> are summarized in table 5.

Hinton's report included 7,121 pregnant women admitted to the Boston Lying-In Hospital from 1915 to 1919, of which 5.2 per cent had positive and 4.9 per cent had doubtful tests. The more recent study of that hospital's records discloses that, of 10,200 pregnant women admitted to the antepartum clinic from 1928 to 1930, only 1.4 per cent gave evidence of having syphilis. If only those women in Hinton's series who had frankly positive tests are considered, there appears

TABLE 4—*Wassermann (or Hinton) Tests in 16,352 Cases of Pregnancy*

| Year | Clinics | Total<br>Cases | Positive   |             | Doubtful   |             | Negative   |             |
|------|---------|----------------|------------|-------------|------------|-------------|------------|-------------|
|      |         |                | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent |
| 1930 | 6       | 1,634          | 30         | 2.4         | 18         | 0.8         | 1,582      | 96.8        |
| 1931 | 7       | 2,506          | 66         | 2.6         | 47         | 1.8         | 2,443      | 95.8        |
| 1932 | 11      | 3,685          | 51         | 1.4         | 54         | 1.5         | 3,580      | 97.1        |
| 1933 | 12      | 3,592          | 40         | 1.1         | 44         | 1.2         | 3,508      | 97.7        |
| 1934 | 15      | 4,835          | 61         | 1.3         | 39         | 0.8         | 4,735      | 97.9        |

to have been a reduction of 74.2 per cent in infections with syphilis in pregnant women. If those who had doubtful tests are considered as having syphilis (and pregnancy tends to cause falsely negative rather than falsely positive Wassermann reactions), the reduction in prevalence is 86.7 per cent. The close agreement between the figures for the two clinics (the Boston City Hospital and the Boston Lying-In Hospital) must also have some significance.

#### EVIDENCE FROM MONTHLY REPORTS OF SYPHILIS CLINICS

The department has reports for as far back as 1925 from most of the public clinics in the state. The total admissions for syphilis to these clinics, each year, are given in table 6. These figures are not entirely comparable from year to year, because three clinics from which reports have been received since 1928 did not report previous to that year, although they were in existence. Two clinics, which reported up to 1928, have since been closed. Two new clinics, opened in 1930, have reported since that year. These clinics are small and those which were closed balance those which were opened. Any error is on the side of conservatism, because the three clinics not reporting prior to 1928 are fairly large. If their admissions could be added to the totals for 1925 to 1927, the net decline over the years would be greater than it appears to be. It must also be remembered that the population of Massachusetts

2. The department is indebted to the Society for Social Hygiene for permission to use these figures.

has increased from 4,065,000 in 1925 to 4,411,000 in 1934, so that the clinic rate per hundred thousand of population is proportionately greater for 1925 and less for 1934 than gross admissions indicate. At any rate, the decrease of 21.4 per cent in admissions in 1934 as compared with 1925 is not only significant but an understatement of the actual decrease.

Twenty-two of the twenty-eight clinics have reported regularly during the entire period. They have admitted from 95 to 98 per cent of all clinic patients in any year. Total admissions to these clinics have declined 24.2 per cent in the ten years 1925 to 1934, and the rate of admissions per hundred thousand of population has declined 29.9 per cent in that time (table 7).

This decline has occurred in spite of two important counterforces: the marked improvement of follow-up service in most of these clinics and the more generally routine use of blood tests in associated clinics in out-patient departments. As a result of these two forces many old infections are being discovered and referred to the syphilis clinics. During the last five years there has been a moderate increase in admissions to clinics, a part of which, at least, may be credited to the economic situation, which has tended to drive patients away from the private physician to the clinics. A part

TABLE 5—*Syphilis in Pregnant Women at Two Boston Clinics for the Three Years 1928 to 1930*

|                          | Total  | Evidence of Syphilis |          |
|--------------------------|--------|----------------------|----------|
|                          |        | Number               | Per Cent |
| Boston City Hospital     | 6,575  | 89                   | 1.4      |
| Boston Lying In Hospital | 10,200 | 147                  | 1.4      |
| Total                    | 16,775 | 236                  | 1.4      |

TABLE 6—*Admissions for Syphilis to Public Clinics*

| Year       | 1925  | 1926  | 1927  | 1928  | 1929  | 1930  | 1931  | 1932  | 1933  | 1934  |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Admissions | 3,796 | 3,417 | 3,020 | 2,602 | 2,609 | 2,908 | 2,631 | 2,876 | 3,061 | 2,992 |

of the increase may be due to the more general use of case-finding procedures already mentioned.

It is significant that there has been no corresponding decline in admissions for gonorrhea. In fact they have increased 45.6 per cent in the twenty clinics (of the twenty-two regularly reporting) that treat gonorrhea.

If economic conditions plus a natural expansion of clinic service can increase the admissions for gonorrhea 45.6 per cent and the rate of admissions 34.3 per cent, a decline in admissions for syphilis of 24.2 per cent and in the rate of admissions of 29.9 per cent points to a decrease in syphilis. Syphilis is by far the more expensive disease to treat and its natural drift would be toward the clinics.

This definite decrease in admissions for syphilis cannot be accounted for by migration from clinics to private physicians. From 1925 to 1929 inclusive reports of gonorrhea and syphilis were made directly to local boards of health, so that the department does not know who the physicians are who reported. Data are at hand for the three-year period from 1922 to 1924 and for the last five years 1930 to 1934.

From 1922 to 1924 the average annual number of physicians reporting syphilis was 301 and the average annual number of cases reported by them was 1,019 at an average rate of 25.5 per hundred thousand of population.

From 1930 to 1934 the average annual number of physicians reporting syphilis was 468 (an increase of 55.4 per cent), but the average annual number of cases reported by them was only 1,002 at a rate of 22.7, or a decrease of 17 per cent in cases and of 11.0 per cent in rate. Thus, although one and a half times as many physicians reported during the later period, they reported fewer cases.

TABLE 7—*Admissions to Twenty-Two Clinics*

| Year       | 1925  | 1926  | 1927  | 1928  | 1929  | 1930  | 1931  | 1932  | 1933  | 1934  |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Admissions | 3,719 | 3,323 | 3,403 | 2,451 | 2,427 | 2,734 | 2,690 | 2,711 | 2,804 | 2,823 |
| Rate       | 61.4  | 50.9  | 53.7  | 59.6  | 57.5  | 62.7  | 61.3  | 61.1  | 63.4  | 64.1  |

TABLE 8—*Admissions for Gonorrhea and Rates per Hundred Thousand of Population*

| Year       | 1925  | 1926  | 1927  | 1928  | 1929  | 1930  | 1931  | 1932  | 1933  | 1934  |
|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Admissions | 2,017 | 2,102 | 2,422 | 2,348 | 2,359 | 2,640 | 2,903 | 2,806 | 2,880 | 2,935 |
| Rate       | 49.6  | 51.2  | 58.5  | 56.2  | 55.8  | 60.4  | 63.9  | 64.3  | 63.2  | 66.6  |

In the clinics, admissions for gonorrhea are increasing while those for syphilis are decreasing. The same is true of reports from physicians. From 1922 to 1924 the average annual number of physicians reporting gonorrhea was 596, and the average annual number of cases reported by them was 2,840, or at an average annual rate of 71.2 per hundred thousand of population. From 1930 to 1934 the average annual number of physicians reporting was 871 (an increase of 46.2 per cent), and the average annual number of cases reported by them was 3,500, at a rate of 79.5 per cent (an increase of 23.3 per cent in cases and of 11.7 per cent in rate). The number of physicians reporting syphilis increased 55.4 per cent and reporting gonorrhea, 46.2 per cent. The reports of syphilis from physicians decreased 11.0 per cent in rate, while the reports of gonorrhea from physicians increased 11.7 per cent in rate.

#### EVIDENCE FROM ANALYSIS OF REPORTS

Unfortunately, prior to 1930, reports of syphilis did not state the stage of the infection. However, analysis of some 22,200 reports received from all sources since Jan. 1, 1930, offers rather astonishing verification of the evidence obtained from those sources already considered.

TABLE 9—*Rates of Syphilis (All Forms and Stages) in Massachusetts per Hundred Thousand of Population*

| Year     | Male        |       | Female      |      | Grand Total |       |
|----------|-------------|-------|-------------|------|-------------|-------|
|          | Total Cases | Rate  | Total Cases | Rate | Total Cases | Rate  |
| 1929     | 2,500       | 129.8 | 1,794       | 78.4 | 4,299       | 98.6  |
| 1931     | 2,624       | 125.2 | 1,815       | 78.5 | 4,439       | 100.1 |
| 1932     | 2,407       | 123.1 | 1,839       | 82.9 | 4,247       | 100.2 |
| 1933     | 2,584       | 121.8 | 1,887       | 84.0 | 4,471       | 100.2 |
| 1934     | 2,600       | 121.3 | 1,804       | 82.3 | 4,404       | 100.1 |
| Increase |             | 0.4%  |             | 4.8% |             | 1.5%  |

The total of reports of all forms and stages of syphilis has varied only slightly from year to year, but in the direction of an increase. This is true also of the rates per hundred thousand of population in the sexes considered separately (table 9).

Reports of early (primary and secondary) syphilis, on the other hand, have declined remarkably, from 1,521 cases in 1930 to 1,072 in 1934, a reduction of

29.6 per cent. The rate per hundred thousand of population has declined from 34.9 to 24.3, a reduction of 30.4 per cent. This decline is equally evident in both males and females (table 10).

This decline in reported early syphilis has taken place in spite of nearly constant or slightly increased report-

TABLE 10—*Rates of Early (Primary and Secondary) Syphilis in Massachusetts per Hundred Thousand of Population*

| Year    | Male        |      | Female      |       | Grand Total |       |
|---------|-------------|------|-------------|-------|-------------|-------|
|         | Total Cases | Rate | Total Cases | Rate  | Total Cases | Rate  |
| 1930    | 886         | 42.7 | 635         | 27.8  | 1,521       | 34.9  |
| 1931    | 887         | 42.4 | 584         | 25.4  | 1,471       | 33.5  |
| 1932    | 814         | 38.0 | 591         | 25.4  | 1,405       | 31.6  |
| 1933    | 754         | 35.5 | 481         | 21.4  | 1,235       | 28.7  |
| 1934    | 660         | 30.8 | 412         | 18.2  | 1,072       | 24.3  |
| Decline |             | 2.5% |             | 34.6% |             | 40.4% |

ing of syphilis in all forms and stages. If the decline in early syphilis were only apparent and due, actually, to an increasing failure to report syphilis, there should be an equivalent apparent decline in all forms of the disease and in gonorrhea. Apparently better and wider use of case-finding procedures are discovering enough old infections to keep the total rate up from year to year in spite of a sharp decline in fresh infections.

It is not safe to draw any arbitrary conclusions from a study of even 20,000 reports collected over a period of only five years. However, with an apparent decline in the prevalence of syphilis over a period of at least fifteen years, it may be reasonable to examine the general trend over the last five years in more detail.

Analysis of the 20,588 reports of acquired syphilis according to sex and age of the patient and stage of the disease discloses the following trends (table 11).

1 In the male under 30 years of age the reported prevalence of early syphilis has declined from a rate of 44.9 (per hundred thousand males under 30) to 26.9, or 40.1 per cent.

TABLE 11—*Distribution of Syphilis According to Sex and Age of Patient and Stage of the Disease*  
Rates per Hundred Thousand of Population by Sex and Age

|                   | Male           |       |                   |       | Female         |      |                   |      |
|-------------------|----------------|-------|-------------------|-------|----------------|------|-------------------|------|
|                   | Under 30 Years |       | 30 Years and Over |       | Under 30 Years |      | 30 Years and Over |      |
|                   | Early          | Late  | Early             | Late  | Early          | Late | Early             | Late |
| 1930              | 44.9           | 20.1  | 38.7              | 128.5 | 39.3           | 20.3 | 17.2              | 56.2 |
| 1931              | 41.5           | 20.4  | 43.3              | 133.3 | 35.6           | 20.2 | 16.1              | 60.0 |
| 1932              | 34.4           | 20.9  | 42.0              | 139.2 | 33.2           | 20.2 | 18.5              | 62.4 |
| 1933              | 35.6           | 22.7  | 35.2              | 138.2 | 27.6           | 32.5 | 15.4              | 77.4 |
| 1934              | 26.9           | 10.6  | 34.7              | 150.0 | 22.8           | 29.5 | 13.6              | 86.2 |
| Total cases 2,000 | 1,118          | 2,000 | 7,010             | 1,754 | 1,683          | 949  | 4,003             |      |

2 Late syphilis in this group increased from a rate of 20.1 in 1930 to 22.7 in 1933 and declined to one of 19.6 in 1934. The range of variation over the five years has been only 3.1 and the 1934 rate is only 2.5 per cent lower than that for 1930.

3 In the male over 30 years of age the reported prevalence of early syphilis has declined from 38.7 to 34.7, or 10.3 per cent, but owing to the higher rates in 1931 and 1932 the range of variation has been 8.6, or 19.8 per cent.

4 Late syphilis in this group increased from a rate of 128.5 in 1930 to 150.0 in 1934, or 16.7 per cent.

5 In the female under 30 years of age the reported prevalence of early syphilis has declined from a rate of 39.3 to 22.8, or 42.0 per cent.

6 Late syphilis in this group increased from a rate of 25.3 in 1930 to 35.2 in 1932 and then declined to 29.5 in 1934. The net increase is 4.2, or 16.6 per cent, and the range of variation is 9.9 or 29.1 per cent.

7 In the female over 30 years of age the reported prevalence of early syphilis has declined from a rate of 17.2 to 13.6, or 20.9 per cent.

8 Late syphilis in this group increased from 56.2 to 86.2, or 53.6 per cent.

Apparently the greater part of the decline in early syphilis has taken place among males and females under 30 years of age, and improved case finding has brought to light many cases in the age group over 30 years. This is in conformity with the fact that about 55 per cent of the infections in the male and slightly more than 60 per cent of the infections in the female occur in the age group under 30 years.

Further analysis according to sex and marital status (table 12) discloses that the reported prevalence of

TABLE 12—*Distribution of Early (Primary and Secondary) Syphilis According to the Sex and Marital Status of the Patient*

Rates per Hundred Thousand of Population by Sex and Marital Status

|             | Male   |         | Female |         |
|-------------|--------|---------|--------|---------|
|             | Single | Married | Single | Married |
| 1930        | 97.9   | 31.6    | 41.3   | 35.1    |
| 1931        | 88.0   | 37.0    | 38.1   | 32.5    |
| 1932        | 81.8   | 34.0    | 30.9   | 32.2    |
| 1933        | 74.2   | 31.7    | 30.8   | 35.5    |
| 1934        | 61.1   | 29.0    | 21.5   | 21.8    |
| Total cases | 2,941  | 1,592   | 975    | 1,620   |

Marital status not known in 168 males (4.4 per cent) and 108 females (4.2 per cent).

early syphilis in single males has declined from a rate of 97.9 to 61.1, or 37.6 per cent. The net decline among married males has been 8.2 per cent (from 31.6 to 29.0), but the variation in rate has been 21.6 per cent, the peak rate of 37.0 in 1931, being taken into account.

The reported prevalence of early syphilis in single females has declined from a rate of 41.3 to 21.5, or 33.4 per cent, and in married females from 35.1 to 21.8, or 37.9 per cent. This would seem to indicate that fewer single males and females are becoming infected and that, as a result, less syphilis is being carried over into marriage. Thus fewer infections are taking place among married women.

#### NEUROSYPHILIS

There has been a marked decrease in the reported prevalence of neurosyphilis, from a rate of 12.4 per hundred thousand of population in 1930 to one of 8.4

TABLE 13—*Neurosyphilis in Massachusetts*

| Year    | Male        |       | Female      |      | Grand Total |       |
|---------|-------------|-------|-------------|------|-------------|-------|
|         | Total Cases | Rate  | Total Cases | Rate | Total Cases | Rate  |
| 1930    | 421         | 20.3  | 120         | 5.3  | 541         | 12.4  |
| 1931    | 361         | 17.3  | 121         | 5.8  | 482         | 10.9  |
| 1932    | 360         | 17.0  | 118         | 5.1  | 478         | 10.8  |
| 1933    | 327         | 15.4  | 105         | 4.7  | 432         | 9.7   |
| 1934    | 263         | 12.3  | 109         | 4.8  | 372         | 8.4   |
| Decline |             | 49.4% |             | 9.5% |             | 32.5% |

in 1934, a reduction of 32.3 per cent. This may not be so valuable as evidence of a decline in the prevalence of syphilis as of better treatment. This also has occurred in both sexes, but owing to the much higher rate in males the improvement in that sex is the more obvious (table 13).

This evidence of a decline in the prevalence of neurosyphilis is confirmed by declines in admissions to mental disease hospitals for dementia paralytica and in the



death rate for neurosyphilis. In 1917 the rate of admissions was 87 per hundred thousand of population (state, not institutional, population), and in 1934 it was 52, a reduction of 40.2 per cent. In 1917 the death rate for neurosyphilis was 100 and in 1934 it was 48, a reduction of 52 per cent.

Certainly a 70 per cent reduction in syphilis in pregnant women in fifteen years, a 30 per cent reduction in admissions to syphilis clinics in ten years, a 30 per cent reduction in the reported prevalence of early syphilis in five years, and a 32 per cent reduction in the reported prevalence of neurosyphilis in five years must mean that syphilis is declining in prevalence in Massachusetts. The value of this evidence is emphasized by comparison with marked increases over the same periods in the reported prevalence of gonorrhea and a "counteracting" increase in the number of old infections with syphilis being brought to medical attention.

## DIAGNOSTIC CRITERIA OF COLONIC CANCER

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The individual in whom a malignant condition of the colon develops reports his symptoms to his attending physician after the period of time required for them to ascend to his particular threshold of stimulation. As a rule, further waiting ensues during which the physician determines by such means as are available to him whether the condition is sufficiently serious to require hospitalization, more elaborate diagnostic study, and the possibility of surgical intervention. Unquestionably, the most common expedient applied is the test of time, i. e., do the patient's disease tokens continue or increase during the period of observation?

Because of geographic distances, economic considerations and sectional loyalties, the majority of these individuals eventually find their way not to some great diagnostic center but to one of the thousands of general hospitals of this country, where their management is undertaken, as a rule, by some member of the surgical staff.

The basis of this paper is an analysis of 100 unselected and consecutive cases of cancer of the colon received in the services of various members of the surgical staff of a 500-bed general hospital, this cross-section review being undertaken to aid in answering these questions: Is the present management of this class of case, particularly in the general hospital, satisfactory? Are the presenting symptoms of colonic cancer sufficiently definite that they may possibly be standardized to such an extent as to set up certain diagnostic criteria helpful in abbreviating the total observation period and increasing the number of patients who come to the operating room properly prepared for a previously planned and appropriate surgical maneuver based on a final diagnosis previously arrived at?

The mechanics for definitely confirming or disproving the existence of colonic cancer once the suspicion of its presence is aroused, are widely available and increasingly accurate. Roentgenograms of the colon have reached a high point of technical effectiveness in the demonstration of lesions above the lower sigmoid,

and a large group of proctologists, gastro-enterologists and internists are now competent to inspect directly through the sigmoidoscope the terminal colon in cases in which roentgen examination may give misleading results. The colon is anatomically adapted to the wide excision essential to eradication of malignant growths,

TABLE 1—Location of Colonic Cancer

| Series by                     | Cases | Cecum<br>Ascending<br>Colon | Transverse<br>and<br>Flexures | Descending<br>and<br>Sigmoid |
|-------------------------------|-------|-----------------------------|-------------------------------|------------------------------|
| Judd <sup>1</sup>             | 625   | 26%                         | 20%                           | 54%                          |
| Lockhart Mummery <sup>1</sup> | 580   | 23%                         | 22%                           | 55%                          |
| Erdman <sup>1</sup>           | 119   | 18%                         | 15%                           | 66%                          |
| Graham <sup>1</sup>           | 80    | 35%                         | 14%                           | 48%                          |
| Wilkie <sup>1</sup>           | 101   | 20%                         | 17%                           | 64%                          |
| Lahey <sup>1</sup>            | 73    | 28%                         | 20%                           | 54%                          |
| This series                   |       | 32%                         | 19%                           | 49%                          |

the surgical procedures involved have been simplified, abbreviated and safeguarded to an extent indicating that a constant lowering of operative mortality may be expected, the problem now centers around means of arousing the suspicion that cancer is present in the diagnostic consciousness of the attending physician and surgeon.

Table 1 sets forth the area involved in the cases reviewed. Comparison with statistics on 1,564 cases compiled by six observers<sup>1</sup> indicates that there is a very definite location incidence of colonic tumors, more than one half being found in the descending colon and sigmoid, one fourth in the cecum and ascending colon, and approximately one fifth in the midcolon.

Growths located in the rectosigmoid canal are included in this series because of similarity of symptomatology with other sigmoidal tumors, because they are above the limit of digital detection and because their surgical management also calls for the abdominal rather than the perineal approach.

The sex incidence was practically equal in these 100 individuals, 55 per cent being males, 19 per cent of the patients were under 40 years of age, and the growth was too far advanced for removal in 45 per cent.

When the symptoms that had been observed by the patients were tabulated and compared with those reported in other series, a striking and universal similarity was found to exist.

Cancer of the cecum and ascending colon (table 2) apparently simulates, in more than two thirds of the

TABLE 2—Presenting Symptoms—Cancer of Cecum and Ascending Colon

|   | This Series<br>(27 Cases) | Brindley <sup>1</sup><br>Series<br>(11 Cases) | Priestley<br>Bargen <sup>1</sup><br>Series<br>(100 Cases) |
|---|---------------------------|---|---|
| Right lower quadrant<br>Syndrome          | (45%)                     |   | (60%)   |
| Indigestion                               | (30%)                     | 75%   | (10%)   |
| Silent (tumor only)                       | 75%                       | 82%   | 63%   |
| Blood seen by patient                     | 18%                       |   | 15%   |
| Diarrhea                                  | 14%                       | 18%   |   |
| Tumor palpated on entrance to<br>hospital | 4%                        | 18%   |   |
|   | 50%                       | 82%   | 62%   |

cases, chronic appendicitis, except for the absence of fever and the presence of weakness due to moderate (27 per cent) or severe (38 per cent) anemia. In 22 per cent of the patients the preoperative diagnosis was

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Atlantic City, N. J., June 13, 1935.

1 Judd, E. S. A Consideration of Lesions of the Colon Treated Surgically. South M. J. 17: 75 (Feb.) 1924. Lockhart Mummery, J. P. Diseases of the Rectum and Colon. Baltimore: William Wood & Company, 1934. p. 532. Erdman, J. F. Malignancy of the Colon. Am. J. Digest Dis. Nutrition 1: 881 (Feb.) 1935. Graham, R. R. Carcinoma of the Colon. Am. J. Digest Dis. Nutrition 1: 584 (Oct.) 1934. Wilkie, D. I. D. Cancer of the Colon. Lancet 1: 65 (Jan. 13) 1934. Lahey, F. H. Carcinoma of the Colon. Am. J. Surg. 2: 64 (Oct.) 1933.

appendicitis, 15 per cent of the Priestley-Bargen group<sup>2</sup> and 18 per cent of Brindley's series<sup>3</sup> had been subjected to appendectomy. Twenty-three of the present series were operated on, eight having had one-stage resections. The mortality was 52 per cent. In one half of the surgical deaths the preoperative diagnosis was incorrect or indefinite.

Constipation, manifested by necessity for laxatives or by intestinal colic relieved by a bowel movement

TABLE 3—Symptoms Cancer of Transverse Colon and Flexures

|  | This Series<br>(16 Cases) | Priestley<br>Bargen <sup>2</sup><br>Series<br>(100 Cases) |
|--|---------------------------|---|
| Constipation colic and pain relieved by bowel movement obstruction | 75%                       | 79%   |
| Diarrhea   | 19%                       | 11%   |
| Tumor palpated on entrance to hospital                             | 44%                       | 40%   |

or passage of flatus, is a feature in those cases presenting growths in the midcolon (table 3). Blood was observed in the stool by 19 per cent of the patients, and diarrhea was the predominant feature in a similar percentage. Anemia was almost as constant as in tumors of the right colon. Twelve patients were operated on, eight had one-stage resections, four died following operation, in two of these the preliminary diagnosis was incorrect or indefinite.

Cancer of the descending colon and sigmoid (table 4) apparently makes itself apparent in from one half to two thirds of the patients by constipation and colic, about one fourth have continuous diarrhea. In cases subjected to surgery the diagnosis was incorrect or

TABLE 4—Symptoms Cancer of Descending Colon and Sigmoid

|  | This Series<br>(39 Cases) | Brindley <sup>3</sup><br>(24 Cases) | Priestley<br>Bargen <sup>2</sup><br>(100 Cases) | Colwell <sup>1</sup><br>(69 Cases) |
|--|---------------------------|-------------------------------------|---|------------------------------------|
| Constipation, colic obstruction        | 52%                       | 60%                                 | 64%   | 27%                                |
| Diarrhea                               | 29%                       | 27%                                 | 12%   | 14%                                |
| Blood in stool                         | 01%                       | 25%                                 | 50%   | 14%                                |
| Tumor palpated on entrance to hospital | 33 1/4%                   |                                     |   | 40%                                |

indefinite in three fourths of the 22 per cent which ended fatally following operation.

Rectosigmoid cancer (table 5) presents an accentuation of the symptoms seen in other parts of the left colon, with a sharp rise in the number of patients observing blood in the stool and a paradoxical decrease in the degree of anemia. The preoperative diagnosis was correct in this group, the mortality was 25 per cent.

When the data obtained for the various locations are compared (table 6), an interesting transition upward is noted from right to left in four features: average duration of symptoms, constipation and colic, diarrhea, and macroscopic bleeding. The following symptoms are highest in incidence on the right and decrease as the rectum is approached: anemia, indigestion, localized pain not relieved by bowel movements, and palpable tumor.

Constipation, colic and obstruction are the predominant features of colonic cancer in general (table 7), occurring in from 40 to 50 per cent of the cases, diar-

rhea is noted in a substantial number by all observers.<sup>4</sup> In our own cases the textbook symptom, alternating diarrhea and constipation, was quite unusual as a feature of operable cancer of the colon, our experience agreeing with that of Dr. Sara Jordan<sup>5</sup> and Dr. Erdman.<sup>1</sup>

#### COMMENT

Presenting symptoms which ordinarily evidence themselves to the patient soon after the lesions ulcerate have been stressed in this discussion. As Fansler<sup>6</sup> has said, the symptoms to emphasize are not those which indicate that a carcinoma is surely present but those which indicate that a cancer may possibly be present. They may be due to conditions other than malignancy, but the differential diagnosis between malignancy, once suspected, and appendicitis, diverticulitis, tuberculosis, pernicious anemia and the chronic dysenteries should not be unsurmountably difficult.

The striking similarity in the clinical picture attending cancer of the various portions of the colon, as noted by various observers, offers the hope that these syn-

TABLE 5—Cancer of Rectosigmoid Symptoms and Data

|                                   |                    |
|-----------------------------------|--------------------|
| Average duration of symptoms      | 10 1/2 mos         |
| Youngest patient                  | 18 yrs             |
| Oldest patient                    | 78 yrs             |
| Presenting symptoms               | Constipation 61%   |
|                                   | Diarrhea 22%       |
|                                   | Blood in stool 11% |
|                                   | Tenesmus 6%        |
| Blood seen at some time by        | 78%                |
| Mass palpated to                  | 11%                |
| Moderate anemia to                | 23%                |
| Severe anemia to                  | 7%                 |
| Surgery in all cases              | 100%               |
| Preoperative diagnosis correct in | 27%                |
| Operative mortality               |                    |

dromes may be more widely recognized as suggestive of the presence of malignant change. Particularly is this important in the general hospital, where by sheer weight of numbers other more common abdominal disorders apparently overshadow colonic lesions in diagnostic import.

#### SUMMARY

An analysis of 100 cases of colonic cancer entering a general hospital, and comparison of data thus obtained with the observations of others, reveals a uniform parallel in location and a presenting symptom complex in each location.

TABLE 6—Cancer of Colon Summary by Locations

|   | Right Side | Mid colon | Left Side | Rectosigmoid |
|---|------------|-----------|-----------|--------------|
| Duration of symptoms months                                     | 6          | 7 1/2     | 9 1/2     | 10 1/2       |
| Localized pain indigestion                                      | 78%        | 19%       | 6%        | 0%           |
| Constipation, colic obstruction etc.                            | 0          | 56%       | 58%       | 61%          |
| Diarrhea  | 0%         | 19%       | 27%       | 22%          |
| Blood (seen by patient)   | 14%        | 19%       | 61%       | 78%          |
| Moderate anemia   | 60%        | 70%       | 48%       | 25%          |
| Severe anemia   | 38%        | 30%       | 6%        | 7%           |
| Tumor palpated  | 56%        | 44%       | 33.3%     | 11%          |
| Mortality surgical  | 52%        | 33.3%     | 22%       | 27%          |
| Cases explored under incorrect or indefinite diagnosis (deaths) | 50%        | 20%       | 76%       | 0            |

A tendency is observed to operate in these cases hurriedly, without definite diagnosis and complete preparation, and on discovery of the lesion immediately to

2 Priestley, J. T. and Bargen, J. A. Early Diagnosis of Carcinoma of the Large Intestine. *Am. J. Surg.* 22: 515 (Dec.) 1933.  
3 Brindley, G. V. Symptomatology and Diagnosis of Cancer of the Large Bowel. *Texas State J. Med.* 23: 325 (Sept.) 1927.

4 Hirst, A. F., Turner, T. W. and Venables, J. F. Early Diagnosis of Cancer of Colon and Rectum. *Lancet* 1: 1263 (June 23) 1928.  
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institute a formidable surgical procedure, often in one stage

Cancer of the right colon should be considered diagnostically when the patient presents a history suggesting appendicitis without fever and associated with evidences of anemia

Cancer of the midcolon is a definite possibility when the patient's history includes constipation, colic or diarrhea, weakness and indigestion

TABLE 7—Cancer of the Colon Composite Symptomatology

|  | This Series<br>(100 Cases) | Hurst <sup>4</sup><br>(20 Cases) | Croftord <sup>4</sup><br>(128 Cases) | Ros-sell <sup>4</sup><br>(47 Cases) | DeBorja <sup>4</sup> |
|--|----------------------------|----------------------------------|--------------------------------------|-------------------------------------|----------------------|
| Constipation                               | 40%                        | 30%                              | 40%                                  | 60%                                 | 60%                  |
| Diarrhea                                   | 10%                        | 24%                              | 25%                                  | 11%                                 | 18%                  |
| Alternate                                  | 2%                         | 32%                              |                                      |                                     | 20%                  |
| Colic                                      |                            |                                  |                                      |                                     | 45%                  |
| obstruction                                |                            |                                  |                                      |                                     | 54%                  |
| Additional Data—This Series                |                            |                                  |                                      |                                     | 16%                  |
| Localized discomfort (not colic)           |                            |                                  |                                      |                                     | 31%                  |
| Indigestion                                |                            |                                  |                                      |                                     | 18%                  |
| Blood seen by patient                      |                            |                                  |                                      |                                     | 20%                  |
| Moderate anemia (75% hemoglobin and under) |                            |                                  |                                      |                                     | 45%                  |
| Severe anemia (60% hemoglobin and under)   |                            |                                  |                                      |                                     | 54%                  |
| Total tumors palpated in hospital          |                            |                                  |                                      |                                     | 16%                  |
| Patients under 40 years                    |                            |                                  |                                      |                                     | 31%                  |

Cancer of the left colon is a strong possibility when the individual has continuous or intermittent afebrile constipation or colic, observes blood in the stool or has a continuous diarrhea

710 Medical Arts Building

### ABSTRACT OF DISCUSSION

DR. NEIL JOHN MACLEAN, Winnipeg, Manit. Dr Rosser has brought before this meeting a most important subject, the fact that 45 per cent of the cases of carcinoma of the intestine which is a most curable condition, are too late for radical treatment. I think that one of the most important things in investigating a case is that the doctor in attendance should have developed in himself a cancer consciousness. Unless he has carcinoma in his mind in investigating a case with obscure abdominal symptoms, he is very apt to overlook the condition in the early phase when it can be treated. In cancer of the abdomen a physician probably makes more mistakes by not thinking than by not knowing. The next most important phase in making a diagnosis in the early stages of cancer of the colon is the appraising of mild symptoms. A patient may be complaining of some vague abdominal trouble and on being asked about constipation often says that he is not troubled in that way. Further inquiry reveals that for the last three, six or twelve months he has been keeping himself regular by taking laxatives. Constipation being such a common complaint he doesn't realize its significance but that should be very significant to the examining physician. Indefinite abdominal pains or cramps should always arouse suspicion of carcinoma of the colon. Many patients do not observe blood in the stools and therefore, if a patient has symptoms that one suspects may be due to carcinoma, the stool should be examined not only once but repeatedly these patients are not anemic and haven't lost weight. I am speaking always of an early case when a physician is first consulted. Anemia may not be a marked symptom. I don't think that the negative roentgenologist's report in colon diseases should be considered final.

DR. SARA M. JORDAN, Boston. All physicians probably feel considerable gratification at the results of present-day surgery in colonic carcinoma after the discovery of the carcinoma has been made but still would like to arouse suspicion that a carcinoma is present in the early stages of that lesion. The arousing of that suspicion depends on the keenness of the patient in observation and the alertness of the physician in appraising the observations. The colon in many individuals has never functioned tranquilly and therefore any disturbance in its function is often not considered seriously. On the other hand, Dr Rosser has pointed out that there are certain syndromes

which should call attention to this serious lesion in the digestive tract and that the symptoms vary in various sites of the colon. Males and females are attacked rather equally by this disease. The age of greatest incidence is between 51 and 60, and there is considerable incidence between 41 and 50, it is very low in the very young and the very old. The relation of age to operability is less in the very young and in the very old, that is, between the ages of 31 and 40 almost 80 per cent are operable between 41 and 50 about 60 per cent are operable, whereas between 21 and 30 only 40 per cent are operable, and 80 less than 40 per cent are operable. The duration of the symptoms has interested greatly one of my surgical associates and me because we found in carcinoma of the stomach that the duration of the symptoms had practically no relationship to the operability of the lesion, and this was also somewhat true in the series of colonic carcinoma. In sixty-nine of 270 patients the duration of symptoms was six months and fifty-two patients had symptoms for a year, while thirty-one had them for two years. Dr Rosser pointed out that the site of the lesion was definitely related to the duration of symptoms. I have not yet studied that. The group which had the symptoms for six months was operable in about an equal number of cases with those inoperable. Those who had had them for a year were operable in a slightly larger group, and those who had had symptoms for two years had a much higher percentage of operability. In another series of 152 cases the symptoms as related to the location corresponded a good deal with Dr Rosser's group. The subjective symptoms of pain and obstruction depend on the consistency of the contents of the intestine in its various parts, while severe secondary anemia and cachexia are most marked in cecal lesions.

DR. JULIUS FRIEDENWALD, Baltimore. There is no disorder in which it is more important to arrive at an early diagnosis than carcinoma of the colon, for, as Dr Rosser has pointed out, it is possible only at this stage of the disease to hope for a complete cure by means of surgery. The clinical history is of the greatest value in suggesting at least the possibility of its presence. Slight changes in the motility of the intestine with an unaccountable anemia a tendency to indigestion with increased constipation, or alternating constipation and diarrhea in an individual with previous normal digestive functions is in itself of sufficient importance to demand an exhaustive investigation, especially if in addition localized or generalized abdominal discomfort associated with occasional pain or colic is present. The first suspicion should be an indication for a complete investigation, including rectal and roentgen examinations. It is often at this time that the roentgenogram may present the first definite evidence of the presence of the growth. It is not always necessary to delay until a marked defect is noted in roentgenograms to arrive at the diagnosis. A spasm constantly located in the same area should always arouse suspicion and should lead to further examination of the patient. In a number of instances in my experience spasm was at first reported this was finally determined to be the indication of the presence of a malignant growth. It is important in such cases to eliminate the presence of spasm by the usual methods and to be positive of the constancy of the roentgen observations. In a special instance that came under my attention, in which a capable roentgenologist made a diagnosis of carcinoma of the ascending colon and in which the diagnosis was confirmed by all the usual methods practiced by roentgenologists, the filling defect and partial obstruction were found due to the dragging down of the intestine by adhesions, connected with an inguinal hernia. The difficulties encountered in arriving at an early diagnosis of colonic cancer are at times extremely great and, as surgery offers the only cure and then only when the diagnosis is made early, the question of early diagnosis is of paramount importance. On this account it is extremely important to view with suspicion all patients more especially those over 40 years of age who present a progressively increasing constipation associated with the passage of blood in the stools even though this blood is merely of the occult type. In all such instances routine physical including digital as well as proctoscopic, examinations should be made, and these procedures should be augmented by thorough and repeated roentgen studies.

DR. CURTICE ROSSER, Dallas, Texas. Dr Friedenwald stated that in a person more than 40 years of age certain symptoms

should make one suspect cancer, in the diagnostic criteria I set out, I purposely made no reference to age. In lecturing before my own classes it has been a good many years since I have suggested that cancer should be suspected only in middle-aged or elderly individuals. Nineteen per cent of the patients in this group of 100 were less than 40, I think that the sooner the age factor is left out of the diagnosis of cancer, particularly in teaching students, the fewer cancers will be passed over because of the youth of the patient.

## THE TREATMENT OF THE SCOLIOTIC PATIENT

ARMITAGE WHITMAN, MD  
NEW YORK

Sir James Paget, in that collection of essays which every medical student and doctor should read—*Confessio Medici*—remarks that in order to become a truly successful practitioner of medicine a man should personally experience either a major operation or a serious illness every three years. I thought at the time I read it that that was sound advice. A year or two after the war I read an article on the injection of oxygen into the peritoneal cavity for sundry diagnostic purposes. I was interested in the study of posture at the time, and after I had been personally reassured as to the complete innocuousness of the procedure I tried it on myself. I shall never forget my next four days. The sensation of being an overinflated balloon is an unpleasant one, and I was also able to make some interesting personal observations on the diaphragmatic origin of shoulder pain. That experience led me to the conclusion that wider application of the golden rule might have a surprising effect on medicine and surgery as they are sometimes practiced and, I daresay, is responsible for the title of this paper.

As one surveys the literature on the subject of scoliosis, one finds it to be not only voluminous but highly technical. I remember, in fact, hearing a man who later became a professor of orthopedic surgery remark that the first three times he read X's textbook on scoliosis he didn't understand it, but that he was now on his fourth reading, and its meaning was beginning to come clear. Not all of us have the brains to become professors or the perseverance to plow four times through a single volume, and it has since seemed to me that the subject might well permit of further simplification.

A man's opinions are always, consciously or unconsciously, influenced by his background. I joined the staff of the Hospital for the Ruptured and Crippled in October 1914. Dr. Abbott had recently made the statement that by his method scoliosis of any degree might be corrected as easily as a club foot. His method was being given an enthusiastic tryout both by his jackets and by Dr. Kleinberg's modification, the Kleinberg brace. My recollection of those patients, bent over into the most hideous attitudes, walking, breathing, indeed living with the greatest difficulty, is a painful one. My father and Dr. Kleinberg came shortly to the conclusion that the percentage of improvement did not justify the continued employment of such a method. In a series of sixty cases, the treatment was given up in eighteen, no improvement at all occurred in eight, and the external appearance was improved in thirty-four,

with corresponding changes in the spine, of which six relapsed.<sup>1</sup>

My father then suggested that we try jackets applied in extension, with traction and countertraction against the maximum curvature of the spine, and the greatest convexity of the ribs. These jackets were free from the objectionable features of the Abbott jacket but required considerable skill in their application and continued supervision of the same patient by the same surgeon. The jackets were changed at intervals of two months and the corrective treatment continued on an average of about two years. In short, the treatment was somewhat mutually exhausting. Chance was the factor in its abandonment.<sup>2</sup>

One of my patients, a girl under jacket treatment, disclosed such an extensive condition of acne when her jacket was removed that its reapplication seemed out of the question. These patients were never allowed to be without support and were kept either flat on their backs or suspended by head traction while their jackets were being changed. She was therefore admitted to the hospital and placed on a convex stretcher frame. Not only did her acne clear up but, much to my surprise and pleasure, her curvature showed a very striking and rapid improvement. I then began experimenting with the frame treatment exclusively, sometimes, in the case of unruly patients, supplemented by traction on the head and pelvis. Before long I came to the conclusion that in the average case as much improvement in the curvature could be gained in six to eight weeks of recumbency as we had been able to achieve in two years of jacket treatment. The great improvement in the patient's general condition also was noted.

The question then arose as to what to do next. Treating scoliosis is like getting the bull by the tail—once having started it is impossible to leave off. Any form of corrective or supportive apparatus weakens both bony structures and muscles, and if the apparatus is suddenly removed the patient will collapse like an abandoned accordion, and his last state will be worse than the first. It was in this quandary that I first resorted to the fusion operation which I felt might, so to speak, freeze the spine in its improved state. It was performed on the following hypothesis: I am speaking solely of cases of idiopathic scoliosis—scoliosis of unknown origin. In cases of known origin no hypothesis is necessary.

It is assumed that there is originally a primary curve in response to which to maintain the balance of the body, a secondary curve develops. If one can, by any means, check the progress of the primary curve, the secondary should have no excuse for progressing. Also by providing an area of stiffness, one might facilitate muscular control, on the principle that it is easier to balance a stick than a rubber tube.

The operation performed was originally that devised by Dr. Hibbs, which of course has been modified in various ways—by stellate splitting of the spinous processes, by the addition of tibial grafts, rib grafts, and the use of triple calcium phosphate. Except in the case of very severe curves I do not feel that in the dorsal region grafts are necessary. In the lumbosacral and lumbar regions I think they are essential. I do not use beef bone grafts.

The operation in any case is difficult and severe. The average time consumed is something over an hour.

Read before the Section on Orthopedic Surgery at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

<sup>1</sup> Kleinberg, Samuel. *Scoliosis*. New York: Paul B. Hoeber Inc., 1926.

<sup>2</sup> Whitman, Armitage. *Observations on the Corrective and Operative Treatment of Structural Scoliosis*. *Arch. Surg.* 5: 578 (Nov.) 1927.

In my hands no case has taken more than an hour and three quarters. In case it should, I should have no hesitation about performing the operation in two sections, at an interval of from ten days to two weeks. I attempt to fuse an area including one vertebra above and one below the primary curve. A few days after the operation the patient is replaced on a convex stretcher frame and kept there for eight weeks. A plaster jacket is then applied in suspension. Whitman braces are then provided for the feet, which of course are weakened by the prolonged confinement to bed, and the patient is shortly discharged. The jacket is worn for four months and is then replaced by a low duralumin Knight spinal brace designed to steady the weakened muscles of the lumbar region during the period of further recovery.

Suppose that a patient presents herself at the hospital with a curvature of the spine. One wishes to know (1) whether the deformity is progressive and (2) whether it is susceptible of improvement by the ordinary methods. The patient is given the routine physical and roentgen examination and is turned over to the physical therapy department for a silhouette and vital capacity test, and given exercises. I am assuming, of course, that this is a borderline case. In the severer cases the preliminary exercises may be dispensed with. The greatest emphasis is placed on the patient's mental attitude. It is explained to her that posture is largely, and far most importantly, an attitude of mind rather than of body, and that there is no back so crooked that its appearance may not be improved by effort. Conversely, there is none so straight that it may not by slouching be made to simulate deformity. I am convinced that, if the importance of the mental attitude were more generally understood and emphasized, many of the severe corrective methods now in use would be unnecessary.

Suppose, therefore, that conservative methods having been tried and failed, one resorts to the frame treatment and operation. A definite improvement in the x-ray appearance of the curve is expected in some cases, and the maintenance of such improvement permanently. This would be classified as an excellent result and would be expected in exactly corresponding ratio to the patient's intelligence. In the second, and far more numerous, class one would expect to improve the external appearance of the trunk and by the operation permanently to check the progress of the deformity, as evidenced by roentgen examination. It is expected so to modify the deformity that it is not evident through the clothing. In both these classes a definite improvement is expected in the patient's vital capacity and general condition. The third class is that of very advanced curvatures in which the treatment is instituted and the operation performed not with any idea of improving the curvature but simply to check its progress, enable the patient to wear less cumbersome apparatus, and improve his general constitutional condition. Of course, I cannot prove it, but it is my definite impression that a number of patients in this desperate class have had their lives prolonged and their general condition much improved by such treatment. At any rate the patients all say that they feel better. Throughout the treatment of all classes of patients emphasis is laid on the principle that no matter what is done no harm shall be done to the patient.

To summarize, therefore, the conclusions derived from twenty years of observation and treatment of idiopathic structural scoliosis, I am convinced that the treatment of the curvature should be secondary to the treatment of the patient. Provided the patient's external appear-

ance and general condition are improved, the amount of curvature shown by the x-rays is immaterial. The greatest contributing factor to the development and progression of scoliosis is man's assumption of the upright attitude and his consequent unequal struggle against the malignant unrelenting pressure of the force of gravity. Removal of this all important factor by recumbency on the convex stretcher frame is not only physiologic but reasonable.

It is not justifiable to suppose that the treatment of scoliotic patients is ever going to be confined to the hands of experts working in highly specialized institutions, able to disregard all considerations of expense either to the patient or to the institution, and treatment by corrective jackets should never be undertaken except by such experts and in such surroundings.

The frame treatment, therefore, is presented as being simple, economical and physiologic.

I had intended to present this paper jointly with a recently graduated Gibney Memorial Fellow of the Hospital for the Ruptured and Crippled, who had made a statistical study of a series of 100 postoperative cases. Owing to circumstances over which I had no control the joint presentation proved impossible, and I shall therefore make no use of the statistics. I recall the remark of the English statesman Bagehot, who remarked that there were "lies, damned lies, and statistics." That statement is not adduced in a spirit of sour grapes or intended to disparage painstaking follow-up work. I have always felt, however, particularly in the practice of orthopedic surgery, that given a reasonable degree of honesty, the opinion of most value in judging the efficacy of any form of treatment was that of the man who had seen the patient in the beginning and had personally followed through the treatment to the end. I also, although this may be somewhat unscientific, attach great value to the opinion of the patient himself. A physician may labor with the body of a patient as he pleases and the results may seem theoretically successful, but it is the patient who has to use the body and must therefore be more critical than any one else of its adaptation to his practical needs.

I conclude with the quotation from Magellan. He said "The priests tell us that the world is flat, but I know that it is round, for I have seen its shadow on the moon, and I had rather believe the evidence of my own senses than anything the priests may tell me."

71 Park Avenue

#### ABSTRACT OF DISCUSSION

DR. A. B. FERGUSON, New York. Dr. Whitman has presented the hyperextension treatment of scoliosis as an improvement on Abbott jackets. I think that Dr. Whitman admits that the bent jacket is the most efficient method of obtaining maximal correction of curvature. I feel that comparison should be made with that efficient method rather than with the Abbott jacket method. Dr. Whitman said I am convinced that the treatment of the curvature should be secondary to the treatment of the patient. The assumption that any one treating scoliosis is unaware of this seems wholly unwarranted. The most important application of this principle is that girls aged 13½ or more and boys aged 15 or more who have passed their period of rapid spinal growth and have only a moderate curvature need no treatment whatever unless it be some simple postural exercises. Their curves will not increase. Dr. Whitman said 'Provided the patient's external appearance and general condition are improved the amount of curvature shown by the x-rays is immaterial. Obviously this is true. On the other hand the patient's external appearance and general condition so far as they relate to scoliosis are irrevocably linked to the amount and character of curvature as demonstrable in the roentgenogram, so that it becomes an index of improvement or impairment of



the condition and should be used as a reliable record of the patient. Dr. Whitman said "The greatest contributing factor to the development and progression of scoliosis is man's assumption of the upright attitude." This seems to overlook the fact that scoliosis can develop to a marked degree while a patient remains recumbent after an attack of poliomyelitis and that progress of curvature in any material degree is associated with growth as there may be no progress whatever during periods of slow growth or after growth has ceased although gravity remains potent and the erect posture is assumed with normal frequency. Dr. Whitman presents the frame treatment as being simple, economical and physiologic. The frame treatment is a method of correction of curvature. Spine fusion is a method of solidifying the spine. The advantages or disadvantages of operative methods are distinct from those of the methods of correction. The complexities and expenses of surgical treatment of scoliosis are present in surgical cases whatever method of correction is used. The dangers of surgical treatment are largely independent of the method of correction. Operation is now performed while the patient is in a bent jacket and the operative mortality is less than 1 per cent. In the past the mortality was higher even when the operation was not done with a jacket applied. The higher mortality was due to too much surgical ambition. If no more than five vertebrae are fused at one time, the operative mortality can be kept low, if more than five vertebrae are fused at once, the mortality will be higher regardless of the method of correction.

DR. MATHER CLEVELAND, New York. Dr. Whitman has made the statement that the literature on scoliosis is voluminous and highly technical. I agree with this. In his paper he states that it is essential to know two facts about the scoliotic patient: (1) Is the deformity progressing? and (2) Can it be improved? No adequate approach to the problem can be planned which ignores these two fundamental facts. That the deformity is progressing can be ascertained only by observation over a period of months with repeated roentgenograms of the spine. A 14 by 17 inch plate anteroposterior from the iliac crests up sitting and lying, to study the influence of weight bearing. That the deformity can be improved can be determined only by the amount of flexibility of the spine shown by clinical examination and roentgenograms with the spine bent into a corrected position. The period of danger for the scoliotic patient is the period of rapid growth from 12 to 14 years of age for girls and from 13 to 16 years of age for boys. During these years those curvatures which are going to progress will increase rapidly. If the surgeon is confronted with a curve of increasing severity that can be corrected the indication is that he should attempt with the means at his command either to straighten the curve hold it or arrest its progress. In my own experience the only effective means to secure this end is by correction in a hinged jacket and fusion of the corrected spine. I agree with Dr. Whitman that the treatment of the curvature is secondary to the treatment of the patient. The vital capacity of these patients in or out of jackets, is materially diminished and the margin of safety is slight. To do at one time a long area of fusion is a time consuming operative procedure that will court disaster from surgical shock. Unless the surgeon is thoroughly familiar with the bent jacket treatment or any other operative treatment, he is treading dangerous ground. Even when he is familiar with it and he knows and anticipates the risks he may run into grief.

DR. ARMITAGE WHITMAN, New York. I have already stated that the jacket Dr. Ferguson has illustrated is by far the best treatment of curvature of the spine that I know. Whether or not it is advisable for the treatment of the patient is one of those differences of opinion that do exist. I wish to take exception to one point Dr. Ferguson made that the assumption of the upright attitude is not the greatest contributing factor in the treatment of curvature of the spine. He says that he has seen a curvature developed by a patient on the frame while suffering from poliomyelitis. I have frequently observed that myself. I said nothing whatever in my paper that had anything to do with paralytic scoliosis. I was confining it to idiopathic types. I am grateful to Dr. Ferguson because I think that his discussion illustrates the fundamental difference in personal points of view that must be the basis for any scientific advancement.

## Clinical Notes, Suggestions and New Instruments

### THE RAPID GROWTH OF A HUGE OVARIAN CYST

RALPH R. MOOLTEN, M.D., NEW YORK

This case is reported as being of interest because of the extremely rapid genesis—six months—of a huge ovarian cyst. In the collapsed state it measured 15 by 15 by 6 cm. but it was so distended that it filled the entire abdomen and contained 15½ quarts (liters) of clear, straw colored fluid.

Six months before the operation, the patient underwent a normal delivery. Labor was of short duration and easy of accomplishment. Instruments were not used. During the course of her pregnancy she was well attended by a competent obstetrician and at no time were any complications or abnormalities noted. There is therefore every reason to believe that the patient did not have a large ovarian cyst during pregnancy and certainly not during labor. Moreover, the abdomen, post partum, returned to a normal size and was not noticeably distended until two weeks later. Consequently it is a most likely assumption that this large tumor developed within a period of six months.

#### REPORT OF CASE

**History.**—M. W., a white woman, aged 26, seen Oct. 4, 1935 had noticed rapid increase in the size of the abdomen since two weeks after parturition, six months before. Recently she had been troubled with dyspnea abdominal distress and frequent vomiting, especially after meals.

The patient's general health had always been good. No operations had ever been necessary. She had been married nine years. One child aged 7 years, was alive and well. One child born six months before, died on the seventh day, following an operation for pyloric stenosis. The menses had always been normal and of the four by twenty-eight day type. Normal menses were reestablished in the fifth postpartum week. The patient was now menstruating.

**Physical Examination.**—The patient was well developed and robust. The abdomen was greatly distended (larger than a pregnancy at term). It was dull on percussion and presented a definite fluid wave. A mass was made out with an indefinite upper boundary, extending well above the umbilicus and filling the rest of the abdomen and pelvis. This could be felt on vaginal examination through the anterior culdesac.

A diagnosis of ovarian cyst was made and surgery recommended.

After leaving my office, the patient had a sudden, severe attack of diffuse abdominal pain associated with vomiting, suggesting a partial intestinal obstruction. She was taken to the Wickersham Hospital, where an emergency operation was performed.

**Operation and Result.**—The abdomen was entered through a low median incision. When the peritoneum was opened, the anterior wall of an enormous cyst under great tension presented itself. It could not be delivered through the incisional opening as it extended well into the upper confines of the abdomen close to the level of the diaphragm. A trocar was inserted and most of the fluid content (15½ quarts) of the cyst removed. The fluid was clear and straw colored. The cyst was then delivered and was found to be of the left ovary. The pedicle was clamped and the cyst amputated. Hemostasis was performed in the usual manner.

The right ovary was sclerotic and had undergone cystic degeneration to about two thirds of its extent. It was retained. The appendix was long and mildly congested. A routine appendectomy was performed. The abdomen was then closed in anatomic layers and one piece of rubber tissue drain inserted under the skin.

A specimen was sent to the laboratory.

The patient made an uneventful recovery and was discharged from the hospital on the eleventh postoperative day.

**Pathologic Examination.** (by Dr. M. J. Fein).—The specimen was an ovarian cyst, which measured in the collapsed state 15 by 15 by 6 cm. The surface was wrinkled and on cut section there were two main cysts with many smaller

daughter cysts The wall was parchment-like in consistency and contained mucoid material The smaller of the two cysts was divided into many smaller cysts with thin partitions between them, and they also were filled with mucoid material

Microscopic examination with low power disclosed large cysts throughout these sections, with papillary projections with the intervening stroma composed of narrow strands of connective tissue and round cells High power revealed the cells to be of the columnar type with the nuclei at the base, and abundant mucinous cytoplasm These cells lined both the papillae and the cysts In portions of the stroma there were glands, which are also lined by the same type of cell There was no evidence of malignancy in the sections

The diagnosis was papillary (pseudomucinous) cystadenoma of the ovary

115 East Eighty-Second Street.

#### PORTABLE DARK ROOM FOR USE IN THE WARD AND HOME

SIDNEY L. OLSHO, M.D., PHILADELPHIA

There is some difficulty in making an exact ophthalmoscopic examination in a light or lighted hospital ward or in a home. The media and fine changes in the retina can be seen very much better in a dark room. As it is not always practical to move patients to such a room, the device illustrated is offered.

It consists of a lady's very short-handled, ordinary, opaque black umbrella. An excellent quality black sateen curtain, one yard wide, is attached by means of snaps to the umbrella circumference, with an overlap of several inches. The opening can be thrown open, more or less, as desired. This curtain is detachable but is best left in place. When the umbrella is opened a dark tent becomes available, which is placed over the



Portable dark room

patient. The umbrella handle may be held by the patient or by a nurse. The examiner must have his head inside the curtain.

This portable dark room makes it possible to make a retinoscopic examination in the ward. It affords a dark chamber also for a patient who is recumbent. It provides a dark room suitable for making an eye examination on patients outdoors, for instance, at a tuberculosis sanatorium. The portable dark room may also be useful to a rhinologist who may desire to transilluminate the sinuses in the ward.

For those not desiring to carry the umbrella, it is suggested that the side curtains be attached to a black umbrella top. The tent can then be placed over any available small umbrella.

235 South Fifteenth Street

## Special Article

### RECOMMENDATIONS FOR A VENEREAL DISEASE CONTROL PROGRAM

IN STATE AND LOCAL HEALTH DEPARTMENTS

SUMMARY REPORT OF AN ADVISORY COMMITTEE  
TO THE U S PUBLIC HEALTH SERVICE

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Associate Statistician U S Public Health Service

Problems relating to the control of syphilis and gonorrhea have offered a challenge which some health departments have not accepted and to which many health departments have given only partial recognition. The widespread prevalence of and economic loss due to these diseases have been reemphasized repeatedly. To stress again such prevalence and loss would be unnecessary.

In the past decade scientific opinion, especially with regard to the treatment of syphilis, has crystallized and authorities are now agreed that much progress can be made in the control of syphilis during the next few years if modern knowledge is accurately applied. In order to summarize such knowledge and to point out the most salient features in an effective program, the Surgeon General of the Public Health Service has appointed an advisory committee, which has been charged with this responsibility.

The large number of state and local health departments and the heterogeneous character of the population in the areas concerned made it necessary for the committee to limit the report chiefly to general recommendations. It is believed, however, that health officers, physicians and others interested in the control of the venereal diseases will find many points of fundamental importance in this report and that such points are basic principles in the efficient operation of a well balanced health department.

#### ADMINISTRATION OF THE PROGRAM

The health department of a state, large municipality or health district should include the following provisions in its administrative organization:

1 Venereal disease control work should be integrated or performed in close liaison with the communicable disease division of the health department, but it should be directed under a separate section or subdivision with a high degree of autonomy.

2 The program should be directed by a full time venereal disease control officer.

3 In each state, large municipality or health district there should be a local advisory committee to the health department, which will be charged with the coordination

of venereal disease control activities of the health department, the medical and allied professions, and voluntary agencies

4 The proportion of health department funds to be allocated to the venereal disease control activities should in general be determined by two considerations. First a carefully drawn state program to secure for the public adequate protection against the spread of disease by infected individuals, and for the individual patient adequate treatment, skilled medical care and maximum privacy. Second, allocation of funds on the basis of the relative prevalence of the venereal diseases in relation to all communicable diseases in the state's morbidity rates, or in the relationship of such morbidity rates to special political or geographic units within the state

#### ADEQUATE TREATMENT FACILITIES

The committee agreed that clinic service should be available for (a) the diagnosis and emergency treatment of any patient who applies, (b) any patient who is referred by a private physician, either for continued treatment or for consultative advice and opinion, and (c) any patient who is unable to afford private medical care

Polyclinics are recognized as preferable to isolated clinics in supplementing existing sources of treatment. Health department funds would in most places be more wisely expended in subsidy to efficient polyclinics already existing, rather than in the establishment or support of separate clinics. In such subsidized clinics the health department should require minimum standards of efficiency in conformity with the general state and national policy. No clinic that is a part of the service of a hospital should be subsidized by state funds if such hospital refuses to admit patients with gonorrhea or syphilis to its beds. The monetary compensation for all physicians should be such as will secure the loyal and continuous service of the best equipped men available

In rural communities, adequate treatment facilities for indigent patients may be achieved (a) by subventionary assistance to properly qualified local physicians, (b) by county health officers themselves, provided these health officers have had proper training in the clinical management of cases, (c) by subsidies to counties or communities for the transportation of such patients to the nearest center at which approved treatment may be obtained, (d) by the establishment of special clinics in rural communities in which large numbers of Negroes are included in the population and in which it is desirable because of unusually high prevalence to supplement the efforts of local physicians, and (e) possibly by the development of a traveling health unit in which the necessary measures may be instituted for the prevention of the communicable diseases, including treatment of the venereal diseases

In addition to the diagnostic laboratory services now provided by most state health departments, it is recommended that there be made available in each state at least one approved venereal disease diagnostic and treatment center in which, among other services, roentgenologic and special laboratory facilities are provided. Patients unable to pay for these services should be referred to such a center for consultation by the local physician or the state subsidized physician charged with their care. Such centers may properly be associated with general hospitals operated by the state, county or municipality. In addition to the ambulatory consultation service, these institutions should provide for the hospitalization of patients whose illness requires

inpatient care. The cost of transporting such indigent patients to and from the consultation and hospital center from rural areas should be borne by the state

When physicians in rural areas are subsidized by health departments, the latter should require minimum standards of training from such physicians

The free distribution of antisyphilitic drugs by the state to all sources of treatment is rational as a partial subsidy. The drugs offered should include at least two of the common arsenicals and, so far as possible within budgetary limits, a generally accepted bismuth preparation

#### PREVENTION OF THE PRENATAL TRANSMISSION OF SYPHILIS

It is now incontestably established that the prenatal transmission of syphilis can be prevented in the vast majority of cases by the institution of effective treatment for syphilis before the fifth month of pregnancy. When the syphilitic pregnant woman does not present herself for examination until after this time, antisyphilitic therapy should be continued as long as possible before the termination of gestation. The performance of blood serologic tests on every pregnant woman as early as possible, and preferably more than once in the course of her pregnancy, should be routine procedure in all antepartum hygiene programs

The treatment of the indigent pregnant syphilitic woman should be administered either in the venereal disease clinic or in the antepartum clinic, depending on the availability of physicians trained in syphilology in the respective clinics

#### EPIDEMIOLOGIC WORK

The venereal disease control section of a health department should, in order to provide adequate service, employ and supervise one or more medical follow up workers on its own staff. It should also insist on the employment of, and provide for close cooperation with, similar workers attached to and under the supervision of subsidized clinics. The workers under the direct employ of the health department should offer service to nonsubsidized clinics and to private physicians

The medical follow-up worker is charged with two duties, each equally important. 1 The epidemiologic investigation of the early infectious case. 2 The follow up of patients lapsed from treatment, especially those with infectious venereal diseases. The investigation of familial contacts in all cases, early or late, is secondary only to these objectives

Medical follow up being an essential part of the control of the venereal diseases, the tact required in and the confidential nature of such follow up should be especially emphasized. Choice of personnel should be based on demonstrated aptitude and suitable personality rather than on routine service classification or assignment

#### LABORATORY FACILITIES

Adequate and universally available laboratory service for darkfield examinations and serologic tests is a first essential in the control of syphilis. While it is not deemed feasible or advisable to restrict the performance of the blood serologic tests to a central state laboratory, it is believed to be sound policy for the state to set standards for the performance of such tests, to control their accuracy and their continued specificity and sensitivity, and to see that conditions are maintained which are essential for accurate technique in serodiagnostic work. For this reason, in addition to the fullest possible development of state laboratory facilities to

supplement existing private facilities, it is recommended that a system of state licensure or approval for hospital, institutional and other private laboratories be organized. The possibility should be borne in mind that under certain circumstances local private laboratories may be subsidized to advantage for the performance of laboratory work.

Among the essentials of an adequate serologic laboratory service, the following are fundamental and should be made the basis of central laboratory organization and state approval: (a) a director who by appropriate theoretical and practical examinations can demonstrate a satisfactory knowledge of the serology of syphilis and its recent advances, (b) a stable, experienced technical personnel, (c) adherence to accepted standards of maintenance of glassware, animal material, incubators and other equipment, (d) the periodic performance of interlaboratory cross-checks on identical specimens, these to include specimens to be sent to the central state laboratory, and (e) the maintenance of a periodic clinical control of serologic results by means of cross-check against the diagnoses made at syphilis clinics conducted under state or other expert auspices.

**Darkfield Examination**—The importance of the darkfield examination in the diagnosis of syphilis should be impressed in every possible way on all physicians, clinicians and other workers interested in public health measures directed against the venereal diseases. State health departments should aim to place at the disposal of every interested physician or group two types of facilities: (a) the direct darkfield examination of secretions by a properly equipped laboratory administered as described, and (b) indirect darkfield examinations (capillary tube method) through the state laboratory.

**Lumbar Puncture**—This is an essential procedure in the management of syphilis. Health departments should require in subsidized clinics, and should urge in nonsubsidized clinics, a lumbar puncture for every syphilitic patient before the completion of treatment. In general, this examination should be performed at some time during the second six months of treatment in early syphilis and at the start of treatment in late syphilis.

For the diagnosis of gonorrhea clinics should be fitted with a microscope and proper stains so that studies may be made during the patient's visit. Only a Gram stain or a good modification of it should be relied on, since diagnostic errors are common with single stain methods. The diagnosis of gonorrhea in the female bears a direct relationship to the care with which smears are made.

#### COOPERATION OF HEALTH DEPARTMENTS WITH PHYSICIANS

There are several ways in which health departments may be of assistance to private physicians: (a) the provision of free diagnostic service, (b) the free distribution of antisyphilitic drugs to private physicians for use in the treatment of private patients who are or may become a danger to the public health and (c) provision of consultation services including roentgenologic and other expensive laboratory examinations for indigent patients or those whose financial circumstances do not permit such expensive studies in private practice.

An obligation of the health department to the physician which cannot be overstressed is that of furnishing him with special information of value in the control of the venereal diseases. Opportunities should be extended

to interested physicians to learn the practical management of syphilis and gonorrhea through rotating terms of clinic service under expert supervision.

#### MORBIDITY AND MORTALITY REPORTS

The venereal disease control officer should assume responsibility for the collection of adequate morbidity and mortality reports. It is possible that collection may be improved by the provision of a simple reporting system, requiring only such data as have actual value for statistical study. The state health department should provide, distribute and collect these reports without expense to the physician and with minimum demand on his time.

Minimum data, which should be included on morbidity reports, should be such as will provide information on the total prevalence of gonorrhea and syphilis, the stage or chronicity of these infections, distribution of cases according to age and sex, prevalence of syphilis in relation to pregnant women, prevalence of gonorrheal vulvovaginitis, the relationship between marriage and venereal diseases, and the time interval between the date of infection and the beginning of treatment. Morbidity reports should not include the name of the patient but should include the place of residence.

#### INFORMATIVE AND EDUCATIONAL PROGRAM

The informative and educational program against the venereal diseases is in many respects its most important phase. Among the important considerations is the provision of more effective undergraduate and postgraduate training by medical schools in the clinical management of the venereal diseases.

The dissemination of informative literature to physicians in private practice is essential. The material used should be selected particularly to aid in practice and to secure active cooperation in the public health control of the venereal diseases. Efforts to inform and cooperate with physicians should be paralleled by similar activities for nurses, medical follow-up workers, and other groups.

The preparation and dissemination of educational material to the general public is also highly important. It is recognized that much may be done to improve this material and to direct it more specifically to the people in need of advice.

#### STUDY OF THE RESULTS OF A PROGRAM

While the regular collection and constant study of morbidity reports should constitute the fundamental points in any retrospective evaluation of a program, special studies are also of value from time to time. The one-day survey, which has been made in a number of localities by the Public Health Service, offers the most satisfactory method of determining progress. It should be used, however, with careful consideration of the following points: (a) A survey should be made sufficiently often to establish a trend, (b) both the residence of the patient and the location of the treating agency must be taken into consideration, (c) data relative to color and sex of the patient should be obtained and, (d) when circumstances permit, the surveys should include also data pertaining to age, marital status and duration of the infection.

Other more specific studies should be made from time to time as follows: (a) a survey of the performance of clinics covering at least two years and taking into account total admissions, sex, age, marital status of the patient and age of the infection at the time of admission and the number and type of treatments before

the patient lapses, (b) a detailed study of the performance of clinic medical follow-up service, covering every admission over a period of at least a year, and including follow-up of the lapsed patient, the source of infection, and contacts, (c) an estimation of the performance of antepartum clinics, taking into account the duration of pregnancy at the time of admission to the clinic, the duration of syphilis in relation to the pregnancy, the interval lapsing before serologic tests for syphilis are made and the interval lapsing before treatment is begun, and finally (d) extension of such studies to physicians in private practice as far as possible

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE AND REPORTS

HOWARD A. CARTER, Secretary

### COLONIC IRRIGATION

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Colonic irrigation may be defined as lavage of the large bowel. Usually, copious amounts of a solution, at body temperature and under low pressure, are introduced and drained through the rectum.

Although the colonic irrigation is frequently looked on by the medical practitioner as a "glorified enema" and is prescribed particularly in the treatment of obstipation, Bastedo<sup>1</sup> stated that "while the ordinary enema is given with the purpose of inducing defecation, the irrigation is administered, not to induce defecation, but to wash out material situated above the defecation area and to lavage the wall of the bowel as high as the water can be made to reach."

It is certain that those who employ colonic irrigation do not place it in the same category with the enema, for it is usually recommended that the bowel be emptied by means of a purgative or enema prior to colonic irrigation. Bastedo, for instance, made the following recommendation as to the procedure to follow prior to irrigating the colon: "If the patient has not defecated, empty the bowels with a plain water enema and wait fifteen minutes for the defecation reflexes to quiet down." The advocates of colonic irrigation are, therefore, of the opinion that treatments should be given in such a manner that the defecation reflex is not aroused.

Among exponents of colonic irrigation, great stress is laid on the fact that the bowel is loaded with bacteria which may produce "toxemia." Pemberton,<sup>2</sup> however, has commented on this as follows:

For many years the question of "intestinal putrefaction" has occupied a large place in the medical and lay mind, and Cruickshank pertinently points out that the bacterial flora in health, on the most varied diets, tends to be proteolytic. He believes that in the last fifteen years no precise work has indicated that, as the result of bacteriologic activity in the intestine, toxic substances are formed which, by gaining entrance into the tissues induce a state of chronic intoxication. Cruickshank makes the pertinent observation that the intestinal contents should be considered, in one sense of the word, as outside of the body. The mucous membrane protects the body under normal circumstances and an intact mucosa presents an almost impassable barrier even to the products of bacterial growth within an enclosed loop producing intestinal obstruction.

The work of Lloyd Arnold and his associates,<sup>3</sup> however, seems to indicate that animals given yeast or bacteria by mouth or by rectum may show significant absorption of these into the general circulation and even into various organs, from which the organisms can be recovered. In discussing the absorption of yeast from the large intestine Arnold and Fisher conclude that:

1 Yeast is absorbed from the lumen of the colon in greatest numbers at fifteen minutes diminishing thereafter until none can be demonstrated at the two-hour interval. 2 Egg white mixed with yeast increases the number of yeasts absorbed from the rectum of the dog. 3 A greater number of viable yeast cells can be demonstrated to be present in certain organs after the application of egg white to the duodenal mucosa and yeast introduced into the lumen of the rectum.

### VARIOUS OPINIONS AS TO THE VALUE OF COLONIC IRRIGATION

It is extremely difficult to determine the exact sphere of usefulness, if any, of the colonic irrigation.

It is unquestionably true that this method of treatment has been outrageously exploited not only by the out-and-out charlatan but by the ignorant but nearly honest layman (sometimes a nurse, sometimes a widow, or sometimes simply a member of the great army of the unemployed) seeking to earn an income by giving irrigations for sundry diseases at so much per treatment. Finally, and most unfortunate of all, there are those within the ranks of the medical profession itself, usually self-styled "gastro-enterologists," who have fitted out elaborate suites of offices with one or more "colonic lavatories" presided over by lay male and female workers who give innumerable irrigations to their patients.

These individuals exploit the public by playing on its belief in the great value of "elimination," of "removal of toxins," and of a "clean alimentary tract." On the other hand, the honest gastro-enterologist, revolted by this obvious exploitation, frequently attacks the use of colonic irrigation for any condition. In between these two extremes there exists a group of physicians who are seeking information concerning this method of treatment and who would really like to know whether it does or does not have certain fields of usefulness.

One can hardly fail to be impressed with the violently opposing views expressed in most of the literature on this subject. One writer, for instance, tells of "phenomenal success in the treatment of many diseases due to consistent and thorough colonic treatments," whereas another bitterly and somewhat facetiously decries the existence of too many "colon filling stations."

One finds that among physicians of unimpeachable medical integrity there are widely divergent views concerning the value of colonic irrigations. For example, Bastedo wrote: "In some circles there has been much criticism of the use of irrigations in 'mucous colitis,' but I have been able to relieve many patients who have been denied the advantage of irrigations by physicians opposed to the procedure." On the other hand, Barger,<sup>4</sup> in discussing the treatment of ulcerative colitis, said: "Intestinal irrigations usually are not only not helpful but, in the majority of cases actually are harmful, causing more distress, greater frequency of rectal discharges, and often irritation about the anus."

Again, whereas Bastedo contended that colonic irrigation "leaves the colon more or less empty and contracted"

From the Section on Physical Therapy the Mayo Clinic.  
1 Bastedo, W. A. Colon Irrigations. Their Administration. Therapeutic Application and Dangers. J. A. M. A. 98:734-736 (Feb. 27) 1932.  
2 Pemberton, Ralph. Arthritis and Rheumatoid Conditions. ed. 2. Philadelphia: Lea & Febiger, 1935.

3 Arnold, Lloyd and Fisher, Virginia. Absorption of Bacteria from the Large Intestine. Proc. Soc. Exper. Biol. & Med. 29:490 (Jan.) 1932.  
4 Barger, J. A. Chronic Ulcerative Colitis. Trends in Its Present Day Management. Am. J. Digest. Dis. & Nutrition 1:190-192 (May) 1934.



and thus exerts a beneficial effect on its blood supply and its tone" and that "the charges that irrigations do harm by removing normal mucus, by lowering the tone of the bowel and by producing colitis are without foundation," Rankin, Barger and Buie<sup>5</sup> wrote

We have judiciously avoided comment on the use of colonic irrigation. Our experience would tend to diminish its use. Almost invariably irrigation with medicated solutions, continued over a time that is long enough to have effect makes for increased irritation and abdominal discomfort. Indeed, as Friedenwald and Feldman pointed out in 1931, prolonged use of even the simplest enemas is irritating to the colon of dogs. Undoubtedly there are instances in which small enemas of salt water have value in helping to empty the rectum but intestinal douches, long continued, should be avoided. Tidy has suggested that "medicated enemas continued over a period of time would induce colitis in healthy individuals."

Yet again, Pemberton, in a careful evaluation of the pros and cons of colonic irrigation in the treatment of arthritis, while graphically outlining the shortcomings, makes clear that he uses colonic irrigation in conjunction with colonic massage in some of his cases of arthritis. (In an outline of the chief therapeutic measures utilized in the achievement of results in 200 cases of arthritis—atrophic, hypertrophic and mixed types—colonic massage and irrigation were given in forty cases.) Pemberton stated that

One of the most graphic evidences of the value of colonic irrigation is sometimes to be seen in the sudden and sporadic evacuation of a considerable amount of particularly evil smelling and looking material, in some cases days or even weeks after irrigations have been instituted. This suggests very strongly that a pocket of some kind may have existed which does not empty easily or that a small loop of colon may remain filled an undue length of time. It is the experience of many observers in a number of conditions, including arthritis that efforts directed at reducing the degree of retention of the contents of the colon may have beneficial consequences. The means to this end may be the ordinary laxatives, though these are not altogether satisfactory and involve certain undesirable effects, or they may be in the nature of irrigation per rectum with various kinds of solutions.

On the other hand Brown,<sup>6</sup> in discussing the treatment of colitis and so-called colitis, stated

I have tried many solutions for irrigating the colon and have decided that with the exception of a gently administered warm saline solution, none is of much value, the only value of the saline irrigation is to rid the rectum temporarily of irritating secretions and afford some local comfort by the warmth of the solution.

Again, in discussing diarrhea, he wrote

Irrigation of the colon has little if any place in the treatment of diarrhea. The occasional use of a small warm saline enema, preferably at bedtime, may be of aid but its constant usage is not advisable.

Lockhart-Mummery,<sup>7</sup> in discussing the treatment of ulcerative colitis stated

Various substances have been used for washing out the colon. Hurst advised tannic acid, 1 to 2 grains to 1 ounce. Potassium permanganate (1 to 16,000) has also been used. Strong antiseptics must on no account be used as they will be absorbed. A good solution is from ½ to 1 per cent protargol. Bismuth subgallate (5 per cent) suspension in olive oil is very useful, 8 ounces should be put in and retained if possible. In several cases the best solution for washing the colon is a hyper-

tonic salt solution, 2 drachms of salt to the pint. This tends to increase the flow of lymph from the ulcerated area and to stimulate granulation. The solution should be as nearly as possible at blood temperature, and should be introduced very slowly and without pressure so that spasm is not set up in the colon. To do any good the lavage should be done two or three times a day.

On the other hand, Barger,<sup>8</sup> in describing the management of chronic ulcerative colitis, mentioned that

As in other chronic infectious lesions, i. e., tuberculosis of the lungs, rest of the involved parts is important. For this reason colonic irrigations are rarely indicated.

Stroud,<sup>9</sup> in speaking of colonic lavage in cardiovascular diseases, said "Since improper intestinal elimination is so common, and since gastro-intestinal symptoms are among the first to appear in the presence of cardiovascular disease, it seems logical that this form of treatment should be of definite value." Weisenburg and Alpers<sup>10</sup> wrote "High colonic irrigations are of value in some cases of so-called toxic myelitis." These two observations are apparently based on a consideration of colonic irrigation as a means of producing elimination. Such an effect can probably be achieved better by means of the simple enema, proper medication, or modification of the diet.

Morgan and Hite,<sup>11</sup> in discussing colonic irrigations, stated that

It would be of little use to enumerate the vagaries of this line of medical practice. Suffice to say that at the present time there are two schools of thought relative to the method employed. Members of the first school, which includes many clinicians of wide experience in the treatment of diseases of the alimentary tract, maintain that colonic irrigations and enemas should be restricted quite definitely to a very limited class of colon disorders. They believe that such treatment should be practiced but only for definitely limited periods of time, realizing that a drug or a method of treatment potent for good may be very harmful if carried beyond the limit in quantity or time which the specific ailment calls for. Because hydrotherapeutic measures directed to the colon are likely to fall ultimately into the hands of the unskilled both in and outside the profession, it is vitally necessary that the principle stated above be recognized and accepted at face value. The second school of thought believes in the efficacy of introducing into the colon large quantities of fluid. This method of treatment does not seem to enjoy the popularity that it did some years ago, having been replaced in a large measure by the medicated enema. With the enema are accomplished the same, if not better, results, and with more facility than with the other method.

#### TECHNIC

Even among the advocates of colonic irrigation there is great disagreement concerning the technic to be followed, and the technic varies with nearly every individual. There seem to be two main schools of thought concerning the technic of colon irrigation. One is typified by Wiltsie,<sup>12</sup> who recommends the passage of "a fifty-two inch tube through the colon directly into the cecum", and the other is typified by Bastedo, who said that

The passage of such a heavy, stiff piece of hose for more than a few inches I consider a dangerous procedure. Mor-

<sup>5</sup> Rankin F. W., Barger J. A. and Buie L. A. The Colon Rectum and Anus, Philadelphia W. B. Saunders Company 1932 p. 328.  
<sup>6</sup> Brown P. W. Diagnosis and Treatment of Certain Types of Colitis and So-Called Colitis. M. Clin. North America 16: 1333 1345 (July), 1933.  
<sup>7</sup> Lockhart-Mummery Percy. Diseases of the Rectum and Colon and Their Surgical Treatment ed. 2 Baltimore William Wood & Co. 1934.

<sup>8</sup> Barger J. A. Colitis. M. Bull. Vet. Admin. 11: 19 (July) 1934.  
<sup>9</sup> Stroud W. D. Physical Therapy in Cardiovascular Disease in Principles and Practice of Physical Therapy Hagerstown Md. W. F. Prior Company 1 21 chapter 13 1932.  
<sup>10</sup> Weisenburg T. H. and Alpers B. J. Physical Therapy in Nervous Diseases in Principles and Practice of Physical Therapy 1 8 chapter 16 1932.  
<sup>11</sup> Morgan W. G. and Hite O. L. Physical Therapy in Gastro-Intestinal Conditions in Principles and Practice of Physical Therapy 1 18 chapter 21 1932.  
<sup>12</sup> Wiltsie J. W. Colonic Therapy. A Method of Special Drainage Arch. Phys. Therapy 12 292 295 (May) 1931.

over, the high insertion is unnecessary, for the universal use of the opaque enema in roentgen work has demonstrated beyond question that with a tube inserted 3 or 4 inches into the rectum and a pressure level of 2 feet the liquid will reach the cecum in from two to five minutes. There is no specific difference therefore, between a "low irrigation" and a "high irrigation" and such misleading terms should be abolished.

I thoroughly agree with Bastedo on this point, and feel that, if colonic irrigations should be indicated, the tube should not be introduced for more than 4 to 6 inches (10 to 15 cm). The myth of the so-called high colonic irrigation has thus been exploded, and this term should be abandoned.

In the few cases in which colonic irrigation may be indicated it is probably best to follow one of the two methods described by Bastedo as follows:

*The One-Tube Method*—This involves filling the colon to capacity through a single tube and then allowing the liquid to run out through the same tube the process being repeated a number of times. The tube most favored is velvet-eyed with closed end, number 34 French and is inserted about six inches. As demonstrated by roentgenograms, when the ordinary colon tube is passed beyond six or eight inches it coils up in the upper rectum and, no matter how much of the tube is inserted it rarely enters the descending colon. There is therefore no benefit to be derived from passing a long colon tube 18 to 20 inches to form such a coil in the rectal ampulla.

*The Two-Tube Method*—This employs separate inflow and outflow tubes. For the inflow I use a soft rubber velvet-eyed catheter number 20 to 24 French inserted from 5 to 6 inches and for the outflow, a velvet-eyed closed-end rectal tube (or stomach tube) number 30 or 32 French inserted from 3 to 4 inches.

Bastedo listed the following instructions for the nurse-technician administering the irrigation:

- 1 If the patient has not defecated, empty the bowels with a plain water enema and wait fifteen minutes for the defecation reflexes to quiet down.

- 2 For the first gallon have the patient lie on the left side with the knees drawn up. After that have the patient lie on the back.

- 3 Hang the reservoir so that its midlevel is not more than two feet above the rectum.

- 4 Having freely lubricated the tubes with white petrolatum, have the patient bear down as at stool and insert the inlet tube five or six inches, allowing the water to flow during its insertion. Then insert the outlet tube three or four inches.

- 5 Use plain water at or just above body temperature and let it run slowly to avoid arousing the defecation reflexes.

- 6 If the outlet tube becomes plugged inject a little water through it with a hand bulb. If this does not clear it, withdraw it without disturbing the inlet tube, clean it and reinsert.

- 7 Terminate the irrigation when convinced that the colon is clean or when you think the treatment has been sufficiently prolonged. We expect an irrigation to consume from six to ten gallons and to take nearly an hour.

- 8 After the irrigation, have the patient empty the bowels into the toilet. Examine this return before the toilet is flushed.

- 9 Report particularly on the various odors and on the amount and character of the mucus, feces and recognizable food particles in each gallon of the return.

The use of such copious amounts of fluid is open to criticism. Pemberton<sup>13</sup> believes that the initial amounts should be small. One might also question whether a nurse can determine when, if ever, "the colon is clean." Further, Bastedo makes no mention of the significance of the presence of "mucus, feces and recognizable food particles" in the return flow. Some caution might also be uttered regarding the fatigue that may be caused by too prolonged, too frequent, or too severe treatments.

Rest after treatment is important and needs definite emphasis. The patient should, as a rule, be permitted to rest in the prone position for about an hour following a colon irrigation.

*Solutions*—Part of the "racket" of the charlatan engaged in "colonic therapy" is to concoct and patent one or more solutions to be used in irrigating the colon. These are usually either mild antiseptics or alkalizing or acidifying solutions. Since altering the reaction of the contents of the colon is apparently a futile procedure, and since "the Dragstedts and Nisbet showed the impossibility of sterilizing the intestine by ordinary antiseptics," none of these solutions can be considered useful.

Ordinary tap water or physiologic solution of sodium chloride at body temperature is probably more satisfactory. If colonic irrigation is to be used, the latter is recommended in preference to antiseptic solutions. The use of very hot solutions to destroy intestinal parasites is of very doubtful value.

*Equipment*—Still another phase of the "racket" indulged in by certain lay charlatans in the field is the manufacture of elaborate devices for the administration of colonic irrigations. These machines are part and parcel of the systematized skullduggery practiced by this not inconsiderable group of quacks. These devices usually have one or more adjustable irrigation tanks attached to a table, equipped with various gadgets to make it appear imposing. There may be a built in hopper, and an elaborate system of petcocks, water connections, flushing devices, solution warmers, or tube sterilizers, all as a rule finished off with an imposing amount of shining chromium. It is interesting to note that, strangely enough, there have been and are being issued innumerable patents by the United States Patent Office for these devices.

In all fairness, it must be admitted that some of the manufacturers of these devices are sincere in their misguided belief that their machines will prove a great boon to mankind. It must also be stated that a great many hospitals have equipped themselves with some such elaborate device.

I must confess to having succumbed to the temptation to purchase one such attractive machine for a hospital department under my supervision, during the pre-depression era. Many times thereafter I wished that I might have had the money, thus unwisely spent, for other purposes. For I soon found that the apparatus was in little demand and that the work could be done just as easily with (1) an ordinary treatment table, (2) a plain glass irrigation jar on a stand, (3) a rectal tube and a Y tube with two clamps, and (4) a large closed jar or an ordinary hopper to receive the return flow. If, therefore, colonic irrigations are to be given at all, the latter simple arrangement is recommended.

#### UNTOWARD RESULTS

Colonic irrigations may cause "distress, greater frequency of rectal discharges and often irritation about the anus."<sup>14</sup> Colonic irrigations may disturb the chronic ulcer of the bowel by mechanical irritation, when "as in other chronic infections rest is important."<sup>15</sup> They may produce "nausea with a feeling of pressure in the epigastric region, undue abdominal distention, cramps, anal irritation, and, following the irrigation, a feeling of weakness."<sup>1</sup> Pemberton<sup>13</sup> wrote:

I have seen two deaths from intussusception or volvulus followed by obstruction caused by colonic irrigation in a patient

<sup>13</sup> Pemberton, Ralph. Personal communication to the author.

supposedly accustomed to it. I have also seen two other attacks suggesting obstruction, in two other cases from the same procedure carried out at skilled hands.

Bastedo wrote of the mishaps and dangers as follows:

The most common mishap reported is bleeding from the rectum. In examining these patients I have found that the blood usually comes from hemorrhoids though occasionally from a fissure or ulcer. In two instances I have found a torn rectal valve and in several others an injured or severed polypus. These severe traumas resulted from the use of too stiff a tube or a tube with a sharp-edged terminal opening. Dr. J. M. Lynch tells me of perforation of a sigmoid diverticulum by the irrigation tube.

#### COMMENT

With such a bewildering array of conflicting opinions from authoritative sources, the reader can readily understand my difficulty in giving a proper evaluation of colonic irrigation.

This can probably best be accomplished by describing my experience in the past five years as a hospital physical therapist. In each of two general hospitals of good size there were departments of physical therapy under my supervision, each averaging more than 500 patient visits per month. Each department was equipped with a suitable device for giving colonic irrigations and each was staffed with skilled technicians capable of giving satisfactory treatments under medical supervision. The staffs of these hospitals were fully aware of the availability of these devices for both ward and private patients.

Although there were more than 300 physicians on the staffs of these two hospitals, they rarely found it necessary to order a colonic irrigation. For every 500 patients who came to these departments approximately only four came for colonic irrigations, and most of these were patients with chronic constipation or arthritis. This could indicate that when colon irrigation is made available to the average physician as part of the general service of the average hospital, with no compulsion or restriction as to the use of this method of treatment, he rarely finds occasion to order a colonic irrigation.

Bastedo stated that colonic irrigations are indicated "in chronic states of the bowel, such as are encountered in 'mucous colitis,' intestinal putrefactive toxemia, and in cases in which a focus of infection is believed to reside in the bowel, as in certain cases of rheumatism, neuritis, secondary anemia and sundry run-down conditions." However, the observations of Barger tend to show that colonic irrigations are contraindicated in "mucous colitis" and the consensus among experts in the field would tend to support Barger's contentions.

In "intestinal putrefactive toxemia" the experience of Cruikshank would tend to show that colonic irrigation is a little needed procedure. In this connection Pemberton, in discussing the role of colonic irrigation in arthritis and the relationship between putrefactive and fermentative bacteria, said:

The writer knows as yet of little precise evidence however to show that a change from putrefactive to fermentative types of flora has led per se, without the influence of other concomitant factors, to betterment of the arthritic process, though he has endeavored to induce such changes frequently.

Discussion then narrows almost entirely to the possible usefulness of irrigation in the treatment of focal infection in the colon or in the removal of impacted or pocketed fecal masses in the large bowel. Cruikshank's observations would tend to minimize the contention that the colon is often a focus of infection and

Pemberton in discussing the presence of one infecting organism (the streptococcus) in the colon wrote:

We are in a position today to state that it may be present in the feces in apparent health. It would be philosophically unsound, however, to postulate that it could do no harm.

Nevertheless, since it is known that it is impossible to sterilize the large bowel by means of medicated solutions, the usefulness of irrigations for supposed focal infections in the colon remains controversial. Yet there is apparently sufficient clinical data for one to state that colonic irrigations are of value in the treatment of arthritis. As Pemberton expresses it:

In any event, it is thoroughly determined that in a certain proportion of arthritics, processes of a vague and, as yet, unmapped nature operate unfavorably within the intestinal canal and particularly the colon, apparently apart from any association with the organisms causing focal infection in the ordinary sense of the word. It is reasonably certain that a variety of factors contributes to the intestinal origin of arthritis, and the dispassionate position to be taken today is that which recognizes the several possibilities involved but commits itself unduly to no single one.

It is possible that the use of copious amounts of fluid to wash out retained fecal material above the defecation area of the large bowel is occasionally indicated. Certainly it is an abnormal procedure, and other methods of treatment (particularly dietetic management) which tend to restore normal intestinal function would seem more desirable. It may at times be advisable to treat constipation in this manner in the hope of removing retained fecal material. It seems obvious, however, that oft-repeated or routine administration of colonic irrigations is to be strongly deprecated. At the most, even occasional irrigations are very rarely indicated.

#### SUMMARY

The colonic irrigation is not to be considered as a massive enema but as a lavage of the colon above the area of defecation, administered under low pressure so that the defecation reflex is not stimulated. One must also consider that in conjunction with the lavage there are possibly other factors present (such as pressure, temperature, motion and osmosis) which may act to influence normal and disturbed physiologic processes in the gastro-intestinal tract. Copious amounts of fluid are usually employed. Antiseptic solutions or solutions which tend to acidify or alkalinize the colonic contents are of little or no value. Tap water or physiologic solution of sodium chloride seem, as a rule, more satisfactory.

The term "high colonic irrigation" should be abandoned. The attempt to introduce a long stiff tube into the cecum is dangerous and usually fails, the tube coiling in the rectum. If the tube is introduced only three or four inches, under ordinary conditions the fluid will reach the cecum in from two to five minutes anyway.

Elaborate apparatus is not necessary for the administration of colonic irrigations.

Colonic irrigations have been greatly exploited by charlatans, ignorant lay persons and, most unfortunately of all, by men within the medical profession.

The oft-repeated or routine administration of colonic irrigation is to be strongly deprecated.

Whereas an occasional series of colonic irrigations may be indicated for the treatment of unfavorable conditions within the intestinal canal as for example at times in arthritis or for the removal of retained fecal material from the colon, such indications are relatively infrequent.

### BRIGGS' THERMO THERAPUTOR NOT ACCEPTABLE

Manufacturer Dr J J Briggs, Indianapolis

The Thermo Theraputor consists of a somewhat crudely made heating unit with a thermostat, a pilot light, a switch and a dial thermometer. Various local heat elements termed "Thermolodes," are supplied with the unit, and are listed as follows: One Pencil Sound Thermolode, two Curved, 17-25 French, one Cervical Thermolode, two Nasal Thermolodes, one Recto-therm, one Bi-Plate Thermolode, one Thyroid Thermolode, two Eye Thermolodes.

In general, these heating elements consist of heavy metal which appears to be chromium-plated, and are constructed apparently as is a common electric curling iron with a resistance unit inside the metal case.

The manufacturer submitted a rather voluminous report on these devices. He claims that human tissue "will easily stand 130° F temperature", that "when gonococci are destroyed they leave automatically an autogenous vaccine in the exact spot where it is most needed", that the application of his rectal thermolode to the prostate "has something to do with the regulation or formation of blood sugar." He states "Of course there are probably prostates which must be removed but I have never treated one that was not benefited sufficiently to afford entire comfort." He claims that his results in the treatment of impotence "have been so astounding that they sound ridiculous", that he has "treated many men ranging from 50 to 70 years in age, who were entirely impotent. None have more than 10 treatments, and a few made complete recovery in one treatment." He treated seven cases of diabetes mellitus by applying his heat device to the prostate and states that "the instrument accomplished improvement in six cases to the extent that they could eat and drink what they pleased."

Among the conditions for which the manufacturer recommends his device are orchitis, leukorrhea, feminine prostatism, failing vision, pyorrhea, hay fever, sinus disease, asthma and toxic thyroid strictures.

The unit was examined in a clinic acceptable to the Council. All the applicators impressed the investigator as being crudely constructed. He noted a distinct variation in the temperatures at different points on the surface of the applicators.

Because of the crudity of its construction and because of the unwarranted and unscientific claims presented by its manufacturer the Council on Physical Therapy voted not to include the Thermo Theraputor in its list of accepted apparatus.

### ALOE SHORT WAVE DIATHERM ACCEPTABLE

Distributor A S Aloe Company, St Louis

This unit is recommended by the distributor for medical and surgical diathermy. It is a conventional two tube oscillator, push-pull type of circuit, modified for physical therapeutic purposes. The patient's circuit is capacitatively coupled to the oscillator. The milliammeter, like that on other short wave machines does not indicate the actual current through the patient but serves to indicate relative power and also to determine whether the unit is in resonance.



Fig 1—Aloe Short Wave Diathermy

The wavelength is about 164 meters and the input power about 540 watts. Since there is no acceptable method for measuring the output power of diathermy machines, this value is not stated. The shipping weight of the standard unit is about 75 pounds. Figure 2 is a schematic diagram of the circuit.

In a clinic acceptable to the Council the tissue heating ability of the machine was investigated. Cuff electrodes, about 5 by 50 cm, were used, being separated from the patient's skin by layers of felt.

Thermocouples were introduced into the subcutaneous and deep lying tissues (quadriceps extensor) of the human thigh

While the machine was being operated at the patient's tolerance, the temperature rise (average of eight tests) was observed at the beginning and at the end of twenty minute periods, the thermocouples being removed during the application of the diathermy current. According to the results submitted, the temperature rise of the deep-lying tissues of the thigh was higher than that obtained when conventional diathermy—the criterion for evaluating short wave machines which the Council has adopted—was being used.

The investigator, who tested the machine in a clinic acceptable to the Council, reported that it supplied sufficient energy to

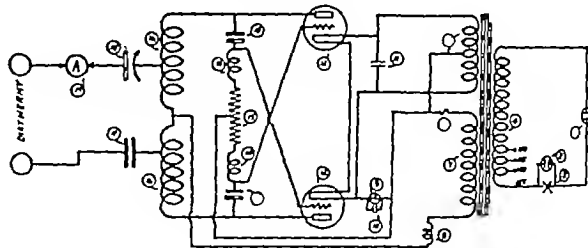


Fig 2—Schematic diagram of the circuit

heat the body tissues whenever such treatment is indicated. Burns may be produced by this machine, but they may be avoided by ordinary precaution, their likelihood to occur is much less than with conventional diathermy.

In view of the favorable clinical performance of this machine when cuff electrodes are employed, the Council on Physical Therapy voted to include the Aloe Short Wave Diathermy in its list of accepted apparatus.

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES OF THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

### DIPHTHERIA TOXIN-ANTITOXIN MIXTURE

(See New and Nonofficial Remedies, 1935, p 384)

Cutter Laboratory, Berkeley, Calif

Diphtheria Toxin Antitoxin Mixture 0.1 L+ (Goat)—Also marketed in packages containing ten 3 cc vials

### TYPHOID VACCINE

(See New and Nonofficial Remedies 1935, p 402)

Cutter Laboratory, Berkeley, Calif

Typhoid Paratyphoid Prophylactic (See New and Nonofficial Remedies, 1935, p 403)—Also marketed in packages of ten vials, ten complete treatments each cubic centimeter containing 1 000 million killed typhoid bacilli, 500 million killed paratyphoid A bacilli and 500 million killed paratyphoid B bacilli

### DIPHTHERIA IMMUNITY TEST (SCHICK TEST)

(See New and Nonofficial Remedies, 1935, p 408)

Cutter Laboratory, Berkeley, Calif

Diphtheria Toxin for the Schick Test Diluted Ready for Use—An aged standardized diphtheria toxin is diluted with peptone solution according to the method of White Bunney and Malcolm so that 0.1 cc. contains a standard Schick test dose. Samples of each lot are tested for sterility by the method of the National Institute of Health. The product is ready for use no diluent being required. Marketed in packages containing sufficient diluted diphtheria toxin for ten and fifty tests.

## CORRECTION

**CONCENTRATED SOLUTION LIVER EXTRACT PARENTERAL-LEDERLE**—The description of this product, so named, appeared in THE JOURNAL, Nov 23, 1935, page 1683. The name of the product should have read "1 cc. Concentrated Solution Liver Extract Parenteral-Lederle" in order to differentiate this product from Lederle Solution Liver Extract Parenteral Refined and Concentrated, which is a different product and is marketed in vials of 3 cc.

## Committee on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION



#### (1) CARNATION PINK BRAND SEEDED MUSCAT RAISINS

DAPHNE BRAND SEEDED MUSCAT RAISINS  
FUCHSIA BRAND SEEDED MUSCAT RAISINS  
HOLLY BRAND SEEDED MUSCAT RAISINS  
HORSESHOE BRAND SEEDED MUSCAT RAISINS  
PANSY BRAND SEEDED MUSCAT RAISINS  
QUAKER BRAND SEEDED MUSCAT RAISINS  
SANTA CLAUS BRAND SEEDED MUSCAT RAISINS

#### (2) FREE FLOWING SEEDED MUSCAT RAISINS

Packer—Guggenbume & Company, San Francisco

Description—(1) Seeded, sun-dried Muscat grapes (2) Seeded, sun dried Muscat grapes with added raisin seed oil

Manufacture—Muscat grapes sun dried as described for Gazelle Brand Seedless Raisins (THE JOURNAL, Jan 26, 1935, p 317) are further dried and hardened with hot air and the capstems mechanically removed. The raisins are washed, processed by slowly passing through hot water and steam, drained, inspected for removal of foreign material or defective fruit, mechanically seeded, dried of surface moisture, cooled, again inspected and automatically filled into cartons. The "free flowing" raisins are sprayed with a small amount of raisin seed oil before packaging.

Analysis (submitted by packer)—

|   | per cent |
|---|----------|
| Moisture  | 17.3     |
| Ash   | 2.0      |
| Protein (N X 6.25)                                | 2.5      |
| Reducing sugars as invert sugar                   | 70.3     |
| Carbohydrates (by difference)                     | 76.7     |
| Acidity as tartaric acid                          | 1.5      |
| Potential alkalinity (cc normal acid per 100 Gm.) | 24       |
| Calcium (Ca)                                      | 0.07     |
| Chlorine (Cl)                                     | 0.06     |
| Copper (Cu)                                       | 0.003    |
| Iron (Fe)   | 0.007    |
| Magnesium (Mg)                                    | 0.05     |
| Phosphorus (P)                                    | 0.13     |
| Potassium (K)                                     | 0.08     |
| Sodium (Na)                                       | 0.18     |
| Sulfur (S)  | 0.08     |

\* Sherman and Gettler J Biol Chem 11 323 1912

† Landow Elvehjem and Petersou J Biol Chem 82 465 (May) 1929

‡ Peterson and Elvehjem J Biol Chem 78:215 (June) 1928

Calories—32 per gram 91 per ounce

#### 1 HAPPY HOUR BRAND

#### 2 LITTLE ELF BRAND FRESHLIKE

STRAINED BEETS, CARROTS CELERY GREEN BEANS PEAS,  
PRUNES FLAVORED WITH LEMON JUICE, SPINACH,  
TOMATOES, VEGETABLES WITH CEREAL AND  
BEEF BROTH, UNSEASONED

Distributors—1 Campbell Holton & Company, Bloomington, Ill 2 G E. Bursley & Company Fort Wayne Elkhart, Marion Richmond and South Bend Ind

Packer—The Larsen Company Green Bay Wis

Description—Respectively strained beets carrots celery, green beans peas prunes flavored with lemon juice spinach tomatoes and vegetables (carrots potatoes tomatoes celery peas beans, spinach) with pearl barley and beef extract prepared by efficient methods for retention in high degree of the natural

mineral and vitamin values. No added sugar or salt. These products are the same as the respective accepted Larsen's vegetables and fruits (THE JOURNAL, July 22, 1933, p 282, July 29, 1933, p 366, Aug 12, 1933, p 525, Aug 19, 1933, p 605, Aug 26, 1933, p 675)

#### CELLU RED RASPBERRIES PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

Distributor—The Chicago Dietetic Supply House, Inc., Chicago

Packer—Eugene Fruit Growers Association, Eugene, Ore

Description—Canned cooked red raspberries packed in water without added sugar or salt

Manufacture—The method of manufacture is essentially the same as for Cellu Blackberries Packed in Water Without Added Sugar or Salt (THE JOURNAL, Sept 28, 1935, p 1039)

Analysis (submitted by distributor)—

|  | per cent |
|--|----------|
| Moisture   | 88.2     |
| Total solids   | 11.8     |
| Ash  | 0.5      |
| Fat (ether extract)                                  | 0.9      |
| Protein (N X 6.25)                                   | 0.8      |
| Reducing sugars as invert sugar                      | 4.9      |
| Sucrose  | 0.3      |
| Crude fiber  | 2.1      |
| Carbohydrates other than crude fiber (by difference) | 7.5      |

Calories—0.4 per gram 11 per ounce

Claims of Distributor—For diets in which sweetened fruit is proscribed

#### 1 MELVERN COFFEE ICE CREAM

#### 2 MELVERN BANANA ICE CREAM

#### 3 MELVERN MACAROON ICE CREAM

#### 4 MELVERN PEPPERMINT ICE CREAM

Manufacturer—Melvern Dairies, Inc., Washington D C

Description—1 Basic ice cream mix (THE JOURNAL, July 13 1935, p 121) flavored with G Washington Coffee extract

2 Basic ice cream mix flavored with fresh sweetened banana pulp

3 Basic ice cream mix flavored with crushed almond macaroons prepared from almond paste, egg white and sucrose.

4 Basic ice cream mix with broken peppermint stick candy prepared from sugar cream of tartar, certified color, oil of peppermint and water, and peppermint extract and certified green color

The method of preparation, freezing and packaging is the same as described for Melvern Vanilla Ice Cream (THE JOURNAL, July 13, 1935, p 121)

Analysis (submitted by manufacturer)—

|                      | Fat Content per cent |
|----------------------|----------------------|
| Coffee Ice Cream     | 15.0                 |
| Banana Ice Cream     | 9.5                  |
| Macaroon Ice Cream   | 14.5                 |
| Peppermint Ice Cream | 14.5                 |

#### KRIM-KOS FIVE-O CHOCOLATE FLAVORED SWEETENED DILUTED SKIM MILK

Bottlers and Distributors—

Alamito Dairy, Omaha

Fort Dodge Creamery, Fort Dodge, Iowa.

Iowa Bottling Company, Clinton, Iowa

Mahaska Bottling Works, Oskaloosa Iowa

Prairie View Dairy, Breese, Ill

H M Richardson, Utica, N Y

Licensor—Krim-Ko Company Chicago, manufactures the Five O Chocolate Flavored Drink Base and licenses its use, the name Five-O and standard advertising under definite contract conditions

Description—Sterilized chocolate flavored sweetened diluted skim milk containing skim milk, water, sucrose, chocolate and cocoa, tapioca flour, salt and a trace of agar, flavored with vanilla vanillin and coumarin. See Krim Kos Five O Chocolate Flavored Sweetened Diluted Skim Milk (THE JOURNAL, June 23 1934, p 2105)



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SATURDAY, JANUARY 11, 1936

## DUES ARE DUE

Out of the experience of recent years THE JOURNAL has evolved a method whereby Fellows and subscribers may pay the annual dues with minimum effort. The colored slip enclosed in this issue of THE JOURNAL requires but a few simple notations and the signing of a check. The slip is a combination of a business statement and cut-out envelop. When folded and sealed it forms a perfect envelop. Since it bears the return address of the Association and a business reply imprint, a stamp for postage is not required. As the annual dues are payable in advance, many Fellows and subscribers have already remitted for 1936. They will naturally disregard the colored slip in THE JOURNAL. Those who have not paid are urgently requested to utilize this slip at once. Thus the Association will be saved the trouble and expense of mailing out personal bills. The colored slip carries the subscription price not only of THE JOURNAL but also of the special journals published by the Association and of *Hygeia*, the Health Magazine. Subscriptions for any additional journals may conveniently be included with payment for Fellowship and THE JOURNAL.

## SOCIAL SCIENTISTS IN THE MEDICAL FIELD

In many writings on medical economics one sees frequently the assertion that physicians know nothing about economics, finance, or similar matters involved in new methods of distributing medical care. They are told that these are problems for economists and sociologists. Some self-certified "experts" in the social sciences testify before state and national legislative bodies, conduct extensive "research projects" and fill the periodical press and the pamphlets of foundations with advice, criticisms and proposals concerning medical care. The medical profession has a right to survey the credentials

of such advisers. Before a physician is called for consultation in the critical stages of any disease, his experience, clinically and in research, is generally known and usually his results have been submitted for consideration and criticism in meetings with professional colleagues. The economist or sociologist who presses his advice on the public should show similar credentials. Has he received the fundamental training adequate to give his opinion value? Has he applied this training to the special problems of social relations in the medical field? It is a revelation to examine the credentials and the training of the most vociferous "experts" who launch propaganda in the field of medical care. A study of the literature of economics and sociology shows that medical relations have been greatly neglected. The writings in economics, including those of self-styled economists who proffer advice on medical matters, contain few discussions of the value, production, distribution or payment for services in relation to the medical profession. Sociologists consider their science fundamentally a study of group relations, yet sociological writings are rare on group organization of the medical profession. Nevertheless medical associations and organizations are among the oldest forms of group action existing in society.

Ethics is closely related to economics and sociology, but ethical literature shows great indifference to the medical codes that have been developing on an almost uniform pattern for more than 2,000 years. Many writers in these fields recognize the close connection between ethics and economics, few, however, appear to have even attempted to analyze that relation in the field of medical ethics and medical economics.

The so-called expert on sickness insurance, contract practice and other new forms of medical practice, who usually has a rather superficial knowledge of general economics, sociology and ethics, often claims his title of "expert" because of his knowledge of the technique of records, administrative organization, financial transactions and political interests involved in these problems. The writings are voluminous but they say least about the product—medical service—which the machinery they are designing is planned to furnish. It is as if an engineer were to set about buying and installing machinery and hiring men for a factory without even considering what that factory was to produce.

The medical profession approaches the problem of medical service from an entirely different point of view. The physician is concerned with the product—medical care—that is to be delivered. What sort of service will it deliver? How will the new system affect the health of the community? Will it raise or lower the morbidity and mortality rates? Will it set up, between the physician and his patient, a screen of middlemen and red tape that will destroy the personal relations essential to good medical service? Will it hinder the advancement of medical knowledge? The medical profession has always had but a single ideal—the protection

of the health of the public by maintaining and rendering such a medical service as will best cure and prevent disease and postpone death. This has been its social function and its reason for existence. When it considers such questions as sickness insurance, state medicine and contract practice the medical profession is more concerned over the quality of medical service than with record blanks, filing systems, efficiency engineering, administrative charts and systems of appointment. It does recognize that the laborer is worthy of his hire and that payment for a service enhances the appreciation of those who buy. But it recognizes also that to some observers the terms or methods of payment seem more significant than the materials or services purchased. If these mechanizations have to be adopted, they cannot be permitted to obstruct the real objective of the profession—the giving of the best possible medical service. Until the “expert” who knows only paper work learns about the really vital aspects of medical care, he will have a hard time to secure a sympathetic hearing from the physician.

#### TUBERCULOSIS IN FAMILIES

The conception of the manner of spread of tuberculosis—the epidemiology—has undergone modification in recent years. A further important addition has been recently reported by Opie and his colleagues.<sup>1</sup> It is based on the study of the spread of tuberculosis in families exposed to the disease in the outpatient dispensary of the Henry Phipps Institute over a period of ten years. The ultimate aim of the investigation was to learn how procedures for the community control of the disease might be improved. One thousand families were included in the observations. The demonstration of bacilli in the sputum, the tuberculin test and the roentgen examination were perhaps the most important diagnostic measures. In general terms it may be said that the tuberculin test defines the incidence of tuberculous infection, roentgenologic examination shows the anatomic extent and to some degree the character of tuberculous lesions, whereas symptoms and physical examination are an index of functional disturbance and serve to determine how far health has been impaired.

The danger to which members of a household in which there are one or more cases of tuberculosis are exposed depends on a variety of factors, some of which are not readily measured. The number of persons with tuberculosis, the abundance of tubercle bacilli in the sputum, the carelessness with which they cough or expectorate are all significant. Probably lack of adequate food or overwork may favor the development of latent to manifest disease. The actual study of different families disclosed widely varying results. In

one large family in which the father had open tuberculosis the mother and one daughter developed tuberculosis, which was arrested in both instances. Of nine others in contact with this father before and at the time of his death, none developed clinical tuberculosis, five acquired healed or healing calcified nodules and one both a nodule and a latent apical lesion. In another large family in which the father had the disease the conditions for spread were evidently more favorable, since one young child died from tuberculosis and two other children developed pulmonary tuberculosis with tubercle bacilli in the sputum and three others developed latent apical lesions, of which one later became clinically manifest. Several illustrations each were given of severe tuberculosis introduced into households by one parent. Examples of relatively scant family infection introduced by one or the other parent were also seen in several of the families. The perpetuation of tuberculous infection and disease by older children of a family and its possible transmission from a parent through them to younger members of the household were suggested by two of the families. Introduction of tuberculosis into the household by the oldest children of the family was illustrated several times.

The incidence and intensity of the tuberculin reaction was determined in members of families (1) with tuberculosis and tubercle bacilli in the sputum, (2) with tuberculosis but no tubercle bacilli in the sputum, (3) with possible contact with tuberculosis and (4) with no known contact with the disease. The observations were significant only when grouped by age. It was evident from the results that members of families in which there had been cases of tuberculosis with tubercle bacilli in the sputum become infected at an earlier age than members of similarly infected families with no tubercle bacilli discoverable in the sputum. It was noteworthy that there was no conspicuous difference in percentage of reaction at corresponding ages in those in contact with suspected tuberculosis and in those with no known contact. This indicates that the usual methods of examination discover all transmissible tuberculosis.

The roentgenographic examinations of members of families with cases of tuberculosis and of those with no contact with the disease furnished several important observations. When correlated with the incidence of tuberculin reactions at corresponding ages in each of the four groups of families it was found that positive tuberculin reactions were much more frequent than evidences of recognizable roentgenographic lesions. The value of a negative tuberculin reaction is shown by the fact that only twenty-nine of 577 persons with negative reactions had recognizable lesions. In persons with positive reactions, however, the incidence of recognizable lesions increased with increasing sensitivity to tuberculin.

Approximately one third of the children exposed to open tuberculosis acquire calcified nodules of lungs or lymph nodes recognizable during life. The incidence of

<sup>1</sup> Opie E. L. and McPhedran F. M. The Organization of an Outpatient Tuberculosis Clinic for Epidemiological Investigation. *Am. J. Hyg.* 22: 539 (Nov.) 1935. McPhedran, F. M. and Opie E. L. The Spread of Tuberculosis in Families, *ibid.* p. 565. Opie E. L., McPhedran, F. M. and Putnam P. The Fate of Persons in Contact with Tuberculosis. The Exogenous Infection of Children and Adults *ibid.*, p. 644.

these lesions is far less in children exposed to tuberculosis with no known dissemination of tubercle bacilli and still less, though still considerable, in children with no known exposure to tuberculosis

The conclusion that the spread of tuberculosis in the community is in great part the result of slowly progressive household epidemics, which often transmit the disease by contagion from one generation to another, seems thus well established. The fate of exposed persons was subject to analysis in the third paper of this series. Among white persons first exposed between birth and the age of 9 years to open tuberculosis, 9.92 per cent of those living from twelve to fourteen years after the beginning of exposure have acquired tuberculosis. Among those exposed to persons having no tubercle bacilli in the sputum the incidence was 1.97 per cent. Twenty per cent of those living who were first exposed to open tuberculosis between 10 and 14 years of age acquired the disease from ten to fourteen years later. Among those first exposed after 15 years to open tuberculosis, 9.66 per cent acquired the disease after living from ten to fourteen years, and of those exposed to tuberculosis without bacilli in the sputum 6.86 per cent acquired tuberculosis.

The practical considerations brought out by this work are fundamental. A greater effort must be made to stamp out the small foci of infection within family groups. With thorough awareness of this problem, the physician with the cooperation of the social agencies should be able to do much in further reducing the inroads of the disease.

## Current Comment

### EDWENIL

In 1933 the Council on Pharmacy and Chemistry published in *THE JOURNAL* a report rejecting a product called Edwenil.<sup>1</sup> This product, proposed for nonspecific immune therapy, is marketed in the United States by Spicer and Company of Glendale, Calif., with offices in various other parts of the United States. It is said by its manufacturer to be a complex organic colloid, formed by a linkage of some of the alkali-denatured protein derivatives of normal serum and muscle, in the presence of a normal saline, containing calcium and magnesium salts. This peculiar preparation is advertised as a single remedy for a hundred diseases. It is said to be capable of protecting animals from otherwise fatal doses of germs. It is offered as a preparation capable of turning the fight in pneumonia, puerperal sepsis or peritonitis in extremis, in fact, the preparation has been recommended for almost everything from acne to syphilis. In American medical literature there is no acceptable evidence to sustain the claims of the manufacturer for the product. The Council was able to find an article about it in the *Medical Journal and Record* of New York, and a large part of this article was found to be identical, word for

word, with a section of an advertising booklet issued by the English firm of E. H. Spicer and Company. In *THE JOURNAL* for Nov. 30 and Dec. 7, 1935, were published two articles indicating what may really be anticipated from nonspecific immune therapy. Moreover, some attention was given to the type of substance that may scientifically and reasonably be used for securing such effects. There is no reason to believe that Edwenil or similar preparations represent an advance in nonspecific immune therapy. There seems to be plenty of reason to believe that such preparations are not even among the good products that ought to be used for this purpose.

### DAYLIGHT IN BUILDINGS

Adequate lighting is a professional problem of special interest to architects and physicians. Among the fundamental investigations which have recently appeared is that by Ives, Knowles and Thompson<sup>1</sup> on daylight in buildings. All their observations were made in a specially constructed building across the Potomac from Washington. The site was selected so that the outlook would be unobstructed by adjacent buildings and not seriously obstructed by trees. It was oriented accurately north and south and the roof and window sections were adjustable, allowing for variation of conditions. Measurements of illumination within the building were made on a horizontal plane 36 inches above the floor at thirty-six stations by means of a photo-electric cell connected through an amplifying circuit to a recording potentiometer. The sky brightness was measured by means of a Weston illuminometer mounted on the roof of the building. No study of the effect of direct sunlight entering the windows was included. Complete series of measurements were made in the building with the ceiling and walls painted a mat white, with the ceiling white and the walls a mat black, and with both ceiling and walls a mat black. It was thus possible to separate the illumination into three components: that coming directly from the window; that reflected from the ceiling; and that reflected from the walls. The results showed that at the middle and rear of the room an increase in the height of a window produces a much greater increase of illumination than a proportional increase of width. Furthermore, it was shown that the uniformity of illumination is increased by increasing the height or the width of the window or the two together. The contribution of the light reflected from a white ceiling and white walls to the total illumination is considerable, varying from 17 to 82 per cent of the total. Figures were established showing the brightness of different portions of the clear north sky at Washington, D. C., for different times of the day and different seasons of the year. A method was developed for determining the illumination produced by lights from the sky within a building having vertical windows of given dimensions for any time of day or season of the year in the United States. Finally, it was possible to obtain figures for the loss of light by reflection and absorption of the incident light in

<sup>1</sup> Edwenil Not Acceptable for N. N. R. J. A. M. A. 101:1154 (Oct. 7) 1933.

<sup>1</sup> Ives, J. E., Knowles, F. L., and Thompson, L. R. Studies in Illumination. IV. Daylight in Buildings. Pub. Health Bull. 218. April 1935.

ordinary window glass and for obstruction by dirt on the glass and by sash bars, casings and tie rods. Eventually such observations as these should be reflected in the architecture of buildings that are designed to make practical use of daylight illumination

## Bureau of Legal Medicine and Legislation

### THE PHYSICIAN'S INCOME TAX—1936

The Revenue Act of 1935 amended in numerous respects the prior income tax law, but none of the changes made relate to physicians as a class distinct from the main body of federal income taxpayers.

Every one who is required to make a federal income tax return must do so on or before March 15, unless an extension of time for filing his return has been granted. For cause shown, the collector of internal revenue for the district in which the taxpayer files his return may grant such an extension, on application filed with him by the taxpayer. This application must state fully the causes for the delay. Failure to make a return may subject the taxpayer to a penalty of 25 per cent of the amount of the tax due.

The normal rate of tax on residents of the United States and on all citizens of the United States regardless of their places of residence is 4 per cent on net income in excess of the exemptions and credits.

#### WHO MUST FILE RETURNS

1 If gross income was less than \$5,000 during 1935 a return must be filed (a) by every unmarried person, and by every married person not living with her husband or his wife, whose net income was \$1,000 or more, and (b) by every married person living with her husband or his wife, whose net income was \$2,500 or more. If the aggregate net income of husband and wife, living together, was \$2,500 or more, each may make a return or the two may unite in a joint return.

2 Returns must be filed by every person whose gross income in 1935 was \$5,000 or more, regardless of the amount of his net income and of his marital status. If the aggregate gross income of husband and wife, living together, was \$5,000 or more, they must file either a joint return or separate returns, regardless of the amounts of their joint or individual net incomes.

If the status of a taxpayer so far as it affects the personal exemption or credit for dependents, changed during the year, the personal exemption and credit must be apportioned, under rules and regulations prescribed by the Commissioner of Internal Revenue with the approval of the Secretary of the Treasury, in accordance with the number of months before and after such change. For the purpose of such apportionment a fractional part of a month should be disregarded unless it amounts to more than half a month, in which case it is to be considered as a month.

As a matter of courtesy only blanks for returns are sent to taxpayers by the collectors of internal revenue without request. Failure to receive a blank does not excuse any one from making a return; the taxpayer should obtain the necessary blank from the local collector of internal revenue.

The following discussion covers only matters relating specifically to physicians. Full information concerning questions of general interest may be obtained from the official return blank and from the collectors of internal revenue.

#### GROSS AND NET INCOMES WHAT THEY ARE

**Gross Income**—A physician's gross income is the total amount of money received by him during the year for professional services regardless of the time when the services were rendered for which the money was paid plus such money as he has received as profits from investments and speculation and as compensation and profits from other sources.

**Net Income**—Certain professional expenses and the expenses of carrying on any enterprise in which the physician may be

engaged for gain may be subtracted as "deductions" from the gross income to determine the net income on which the tax is to be paid. An "exemption" is allowed, the amount depending on the taxpayer's marital status during the tax year as stated before. These matters are fully covered in the instructions on the tax return blanks.

**Earned Income**—In computing the normal tax but not the surtax, there may be subtracted from net income from all sources an amount equal to 10 per cent of the earned net income, except that the amount so subtracted shall in no case exceed 10 per cent of the net income from all sources. Earned income means professional fees, salaries, and wages received as compensation for personal services, as distinguished from receipts from other sources.

The first \$3,000 of a physician's net income from all sources may be regarded under the law as earned net income, whether it was or was not in fact earned within the meaning set forth in the preceding paragraph. Net income in excess of \$3,000 may not be claimed as earned unless it in fact comes within that category. No physician may claim as earned net income any income in excess of \$14,000.

#### DEDUCTIONS FOR PROFESSIONAL EXPENSES

A physician is entitled to deduct all current expenses necessary in carrying on his practice. The taxpayer should make no claim for the deduction of expenses unless he is prepared to prove the expenditure by competent evidence. So far as practicable, accurate itemized records should be kept of expenses and substantiating evidence should be carefully preserved. The following statement shows what such deductible expenses are and how they are to be computed.

**Office Rent**—Office rent is deductible. If a physician rents an office for professional purposes alone the entire rent may be deducted. If he rents a building or apartment for use as a residence as well as for office purposes he may deduct a part of the rental fairly proportionate to the amount of space used for professional purposes. If the physician occasionally sees a patient in his dwelling house or apartment he may not, however, deduct any part of the rent of such house or apartment as professional expense, to entitle him to such a deduction he must have an office there, with regular office hours. If a physician owns the building in which his office is located, he cannot charge himself with "rent" and deduct the amount so charged.

**Office Maintenance**—Expenditures for office maintenance, as for heating, lighting, telephone service and the services of attendants, are deductible.

**Supplies**—Payments for supplies for professional use are deductible. Supplies may be fairly described as articles consumed in the using; for instance, dressings, clinical thermometers, drugs and chemicals. Professional journals may be classified as supplies, and the subscription price deducted. Amounts currently expended for books, furniture and professional instruments and equipment "the useful life of which is short generally less than one year, may be deducted, but if such articles have a more or less permanent value, their purchase price is a capital expenditure and is not deductible.

**Equipment**—Equipment comprises property of a more or less permanent nature. It may ultimately wear out, deteriorate or become obsolete but it is not in the ordinary sense of the word "consumed in the using."

The cost of equipment such as is described above for professional use, cannot be deducted as expense in the year acquired. Examples of this class of property are automobiles, office furniture, medical surgical and laboratory equipment of more or less permanent nature and instruments and appliances constituting a part of the physician's professional outfit, to be used over a considerable period of time, generally over one year. Books of more or less permanent nature are regarded as equipment and the purchase price is therefore not deductible.

Although the cost of such equipment is not deductible in the year acquired nevertheless it may be recovered through depreciation deductions taken year by year over its useful life, as described below.

No hard and fast rule can be laid down as to what part of the cost of equipment is deductible each year as depreciation. The amount depends to some extent on the nature of the

property and on the extent and character of its use. The length of its useful life should be the primary consideration. The most that can be done is to suggest certain average or normal rates of depreciation for each of several classes of articles and to leave to the taxpayer the modification of the suggested rates as the circumstances of his particular case may dictate. As fair, normal or average rates of depreciation, the following have been suggested: automobiles, 25 per cent a year, ordinary medical libraries, x-ray equipment, physical therapy equipment, electrical sterilizers, surgical instruments and diagnostic apparatus, 10 per cent a year, office furniture, 5 per cent a year.

The principle governing the determination of all rates of depreciation is that the total amount claimed by the taxpayer as depreciation during the life of the article, plus the salvage value of the article at the end of its useful life, shall not be greater than its purchase price, or, if purchased before March 1913, either its fair market value as of that date or its original cost, whichever may be greater. The physician must in good faith use his best judgment and claim only such allowance for depreciation as the facts justify. The estimate of useful life, on which the rate of depreciation is based, should be carefully considered in his individual case.

In a Treasury Decision, approved Feb. 28, 1934, No. 4422, it is held, among other things, that:

1. The cost to be recovered shall be charged off over the useful life of the property.

2. The reasonableness of any claim for depreciation shall be determined on the conditions known to exist at the end of the period for which the return was made.

3. Where the cost or other basis of the property has been recovered through depreciation or other allowances, no further deduction for depreciation shall be allowed.

4. The burden of proof will rest on the taxpayer to sustain the deduction claimed.

5. The deduction for depreciation in respect to any depreciable property for any taxable year shall be limited to such ratable amount as may reasonably be considered necessary to recover during the remaining life of the property the unrecovered cost or other basis.

Particular attention is called to the last of the foregoing provisions. If, in prior years, rates have been claimed which, if continued, will fully depreciate the cost less salvage before the end of its useful life, based on conditions now known, a reestimate of the remaining useful life should now be made and the portion of the cost that had not been depreciated at the beginning of the year 1935 (for a return for the year 1935) should be spread over this reestimated life.

**Medical Dues**—Dues paid to societies of a strictly professional character are deductible. Dues paid to social organizations, even though their membership is limited to physicians, are personal expenses and not deductible.

**Postgraduate Study**—The Commissioner of Internal Revenue holds that the expense of postgraduate study is not deductible.

**Traveling Expenses**—Traveling expenses, including amounts paid for transportation, meals and lodging, necessarily incurred in professional visits to patients and in attending medical meetings for a professional purpose, are deductible.

**Automobiles**—Payment for an automobile is a payment for permanent equipment and is not deductible. The cost of operation and repair, and loss through depreciation, are deductible. The cost of operation and repair includes the cost of gasoline, oil, tires, insurance, repairs, garage rental (when the garage is not owned by the physician), chauffeurs' wages, and the like.

Deductible loss through depreciation of an automobile is the actual diminution in value resulting from obsolescence and use and from accidental injury against which the physician is not insured. If depreciation is computed on the basis of the average loss during a series of years the series must extend over the entire estimated life of the car, not merely over the period in which the car is in the possession of the present taxpayer.

If an automobile is used for professional and also for personal purposes—as when used by the physician partly for recreation, or so used by his family—only so much of the expense as arises out of the use for professional purposes may be deducted. A physician doing an exclusive office practice and using his car merely to go to and from his office cannot

deduct depreciation or operating expenses, he is regarded as using his car for his personal convenience and not as a means of gaining a livelihood.

What has been said with respect to automobiles applies with equal force to horses and vehicles and the equipment incident to their use.

#### MISCELLANEOUS

**Laboratory Expenses**—The deductibility of the expenses of establishing and maintaining laboratories is determined by the same principles that determine the deductibility of corresponding professional expenses. Laboratory rental and the expenses of laboratory equipment and supplies and of laboratory assistants are deductible when under corresponding circumstances they would be deductible if they related to a physician's office.

**Losses by Fire or Other Causes**—Loss of and damage to a physician's equipment by fire, theft or other cause, not compensated by insurance or otherwise recoverable, may be computed as a business expense and is deductible, provided evidence of such loss or damage can be produced. Such loss or damage is deductible however, only to the extent to which it has not been made good by repair and the cost of repair claimed as a deduction.

**Insurance Premiums**—Premiums paid for insurance against professional losses are deductible. This includes insurance against damages for alleged malpractice against liability for injuries by a physician's automobile while in use for professional purposes, and against loss from theft of professional equipment and damage to or loss of professional equipment by fire or otherwise. Under professional equipment is to be included any automobile belonging to the physician and used for strictly professional purposes.

**Expense in Defending Malpractice Suits**—Expenses incurred in the defense of a suit for malpractice are deductible as business expense.

**Sale of Spectacles**—Oculists who furnish spectacles, etc., may charge as income money received from such sales and deduct as an expense the cost of the article sold. Entries on the physician's account books should in such cases show charges for services separate and apart from charges for spectacles, etc.

## Association News

### RADIO BROADCASTS

The American Medical Association broadcasts over WEAF, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

**Red Network**—The stations on the Red network of the National Broadcasting Company are WEAF, WEEL, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

**Pacific Network**—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR. The next three programs are as follows:

January 14 Diphtheria W. W. Bauer, M.D.

January 21 Scarlet Fever Morris Fishbein, M.D.

January 28 Health of the Traveler W. W. Bauer, M.D.



## THE KANSAS CITY SESSION

## Kansas City Hotels

The Subcommittee on Hotels of the Local Committee on Arrangements has furnished a list of Kansas City hotels and rates for rooms, which may be found on advertising page 39 of this issue of THE JOURNAL, together with an application form that may be used to secure reservations through the Subcommittee on Hotels. The form that is printed in the advertising pages may be clipped and, when properly filled in, should be sent at once to Dr Ira H Lockwood, Chairman of the Subcommittee on Hotels of the Local Committee on Arrangements, c/o Chamber of Commerce, 1028 Baltimore Ave, Kansas City, Mo.

If those who expect to attend the annual session of the American Medical Association will send in their applications at the earliest possible time, there should be no difficulty encountered in securing satisfactory accommodations. Applicants for reservations are especially requested to include a second and a third choice in order that good accommodations may be assured if the desired reservation cannot be had at the hotel of preference.

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**Medical News**

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(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

**ALABAMA**

Personal—Dr Samuel W Shelton, Guin, has been appointed health officer of Winston County—Dr George E Newton Fayette, has been appointed health officer of Jackson County to succeed Dr Edward A Thorne who has resigned to enter private practice.

**CALIFORNIA**

Hertzstein Lectures—Dr John G FitzGerald dean of the faculty of medicine and director of the school of hygiene and Connaught Laboratories, University of Toronto, will deliver the annual Morris Hertzstein lectures under the auspices of the medical schools of Stanford University and the University of California. The lectures, which will be given March 2-4 will deal with preventive medicine.

**COLORADO**

State Journal Copyrighted—The Colorado State Medical Society has adopted the policy of copyrighting its official journal, *Colorado Medicine*, to prevent misuse or misquotation of its contents.

Society News—Dr James A Matlack among others discussed medical jurisprudence before the Boulder County Medical Society in Longmont, November 14—At a meeting of the Delta County Medical Society in Delta recently Dr Edward R Phillips read a paper entitled 'Casual Relationships in Nature'—Dr William H Halley, Denver addressed the Larimer County Medical Society in Fort Collins November 6 on leukorrhea—A meeting of the Pueblo County Medical Society was addressed in November by Drs George Zur Williams and Ernst A Schmidt both of Denver on 'Hepatic Intoxication and Postoperative Mortality and Roentgen Diagnosis of Gastric Ulcer' respectively—A symposium on cancer of the female genital tract was presented before the Kit Carson County Medical Society in November by Drs Lyman W Mason, Otto S Kretschmer and Sanford M Withers, Denver who are members of a symposium team representing the state medical society.

**DISTRICT OF COLUMBIA**

Society News—Dr Russell L Haden Cleveland discussed "Arthritis in Relation to Infection, Endocrinology and Metabolism" before the monthly meeting of naval medical officers at the Naval Medical School, Washington December 2—Dr Louis A Bure, Rochester Minn will address the Medical Society of the District of Columbia January 29 on 'Proctologic Problems of the General Practitioner the Diagnostician and the Surgeon'.

Bacteriologist Dies of Meningitis—Anna Pabst, bacteriologist of the U S Public Health Service, died December 25 of meningitis, which she contracted while conducting experiments in the laboratories of the National Institute of Health. Miss Pabst received the infection December 17, when a squirming animal into which she was injecting the meningitis culture caused misdirection of the serum into her eye. She continued working until December 21, when she became ill. She was 39 years of age.

**FLORIDA**

Hospital News—The Children's Hospital, Tampa, was closed recently, its work has been taken over by a new pediatric department at St Joseph's Hospital.

Health Department Activities—Dr Paul G Shell, Marianna, was recently placed in charge of a new health unit in Jackson County. Dr Frank V Chappell, formerly of Madison, has been appointed health officer of the Jacksonville district, succeeding Dr Thomas E. Morgan.

Society News—At a joint meeting of the St Petersburg, Pinellas, Sarasota and Manatee county medical societies, December 17, in Sarasota, a symposium on tuberculosis was presented by Drs Joseph Halton, Sarasota, Council C Rudolph, Prescott Le Breton, Roscoe H Knowlton, Orion O Feaster and Arnold S Anderson, all of St Petersburg—Dr Thomas H D Griffiths, Jacksonville, was chosen president of the Florida Public Health Association at its recent annual convention.

**GEORGIA**

Lectures at Atlanta Academy—Reuben L Kahn, D Sc, assistant professor of bacteriology, University of Michigan School of Medicine, Ann Arbor, will present a course of lectures at the Academy of Medicine, Atlanta, January 27-29, under the auspices of the Atlanta Clinical Society. He will discuss 'Tissue Immunity and Clinical Medicine'.

Public Health Meeting—The annual meeting of the Georgia Public Health Association was held in Atlanta, December 13-14 under the presidency of Dr Hugo Robinson, Albany, health officer of Dougherty County. Speakers included

Dr James E. Paulin, Atlanta, The Practicing Physician and the Public Health Program  
Dr Mark V Ziegler, Washington, D C Health Work Under the Social Security Act  
Dr Marjorie M Eliot, Washington, D C Maternal and Child Hygiene Under the Social Security Program.

Officers are Drs Charles O Rainey, Camilla, president, Wedford W Brown, Athens vice president, and Millard E Winchester, Brunswick, secretary, reelected.

**IDAHO**

Personal—Acting Assistant Surgeon Bernard H Shallow, U S Public Health Service, has been appointed chief medical officer at the federal prison camp number 11 at Kooskia. Dr Shallow was formerly connected with the U S Detention Farm at Milan, Mich.

**ILLINOIS**

Personal—Dr Edgar A Thacker has been named medical adviser and instructor in hygiene of the health service of the University of Illinois, Urbana.

Gibbs Medal Awarded—Roger Adams, Ph D, professor and head of the department of chemistry, University of Illinois Urbana, has been awarded the Willard Gibbs Medal of the Chicago section of the American Chemical Society for 1936, for outstanding and fundamental contributions to synthetic organic chemistry and for conspicuous achievements as a teacher of chemistry. Among other things, Dr Adams has synthesized chaulmoogric acid, the active principle of the oil used in the treatment of leprosy, and butyn, a local anesthetic. Dr Adams, now 46 years of age, graduated from Harvard University in 1909 and received the degree of doctor of philosophy from his alma mater in 1912. He began teaching at Illinois in 1916, becoming professor of organic chemistry in 1919 and head of the department in 1926. In 1935, he was president of the American Chemical Society, and received the William H Nichols Medal in 1927.

**Chicago**

Dr Fulton Will Give Hektoen Lecture—Dr John F Fulton, Sterling professor of physiology, Yale University School of Medicine, New Haven, will deliver the twelfth Ludvig Hektoen Lecture of the Frank Billings Foundation, January 24. His address will be entitled 'Somatic and Automatic Functions of the Frontal Lobes'.

**Science in Crime Detection**—The Chicago Medical Society devoted its meeting, December 18, to a symposium on science in crime detection. Leonarde Keeler, director, scientific crime detection laboratory of Northwestern University School of Law, discussed "Science as an Aid to Crime Detection", Mrs. Elizabeth Bass, district supervisor, bureau of narcotics, U. S. Treasury Department, "Narcotics in Relation to Crime," and Dr. Harry R. Hoffman, director, behavior clinic of the Criminal Court of Cook County, "Psychiatry and the Criminal Court of Cook County."

**Society News**—The Chicago Surgical Society was addressed, January 3, among others, by Drs. Henry N. Harkins and Paul H. Harmon on "Surgical Shock as a Lethal Factor in Bile Peritonitis"—Dr. Anderson C. Hilding, Duluth, Minn., discussed "Physiology of the Nose and Sinuses" before the Chicago Laryngological and Otological Society, January 6, and Dr. George S. Livingston, "Smoke Asphyxia"—Dr. Walter C. Alvarez, Rochester, Minn., discussed devices that aid in diagnosis and treatment of gastro-intestinal disease before the Chicago Medical Society, December 11, and Dr. Clayton J. Lundy, "The Heart Beat Mechanism in Health and Disease" and "Uses and Abuses of the Electrocardiogram in Diagnosis of Heart Disease." At a meeting, January 8, Dr. Emil Novak, Baltimore, discussed "Endocrinology and Organotherapy in Gynecology," and Dr. Andrew C. Ivy, "A Review of the Physiology of the Pituitary Gland"—Dr. Frederick C. Irving, Boston, discussed "Three Hundred and Eight Cases of Placenta Praevia at the Boston Lying-In Hospital" before the Chicago Gynecological Society, December 20.

## INDIANA

**Personal**—Dr. Joseph W. Strayer, Evansville, has been appointed medical superintendent of the Smith-Esteb Memorial Hospital, Richmond, succeeding Dr. Horace Wanninger, who has returned to full time practice of medicine.

**Hospital News**—A therapeutic pool was recently completed at the James Whitcomb Riley Memorial Hospital with funds provided by the Federal Emergency Relief Administration. The pool is dedicated to the service of the crippled children of Indiana.

**First County Health Unit in State**—The first full time county health department in Indiana has recently been set up in Lake County. The 1935 general assembly passed a law permitting the establishment of full time county health units and the Lake County commissioners adopted a resolution, Aug. 28, 1935, setting up the new unit. In addition, provision was made for one sanitary inspector, one stenographer and clerk and four public health nurses, all of whom were employed on a full time basis, effective January 1. Dr. William D. Weis, Crown Point, is health commissioner.

## MARYLAND

**Society News**—The Baltimore City Medical Society was addressed, January 3, by Drs. Lawrence R. Wharton and Erle Henriksen on "Operative Findings in Periodic Intermenstrual Pains", Thomas P. Sprunt, physical therapy, and Charles W. Wainwright, "Monocytic Leukemia." Dr. James H. Means, Boston, discussed "The Thyroid Hormone: How It Is Produced and What It Does" before the annual meeting of the society, December 6. The gynecologic and obstetric section of the society was addressed, December 13, by Dr. David Fyfe Anderson, Glasgow, Scotland, among others, on "Observations on the Toxemias of Pregnancy."

## MASSACHUSETTS

**Psychiatric Residencies**—The Worcester State Hospital, Worcester, announces six psychiatric residencies of twelve months to begin July 1. The service will be rotating in medical and surgical wards and in male and female psychiatric wards. The hospital provides maintenance. Graduates, unmarried, of class A medical schools who have completed accredited internships in medicine are eligible. Registration should be made by March 1 and the examination will be held at the hospital, March 15. Applications should be sent to the director of clinical psychiatry.

**Physician Honored**—Dr. James B. Ayer, James Jackson Putnam clinical professor of neurology, Harvard Medical School, Boston, was honored at a dinner at the Tavern Club, November 26, in recognition of his completion of twenty-five years of teaching at the medical school. Dr. Charles Macfie Campbell acted as toastmaster, and brief speeches were made by Drs. James H. Means, William Jason Mixter, George L. Walton, Merrill Moore and Henry R. Viets. Amusing skits on the neurology of the past depicting scenes in the lives of

Magendie, Quincke and Gowers, were presented under the direction of Drs. Stanley Cobb and Tracy J. Putnam.

**Dr. Clute Made Professor of Surgery**—Dr. Howard M. Clute has been appointed professor of surgery in Boston University School of Medicine and chief of the surgical service of the Massachusetts Memorial Hospitals, succeeding Dr. Ralph C. Wiggan. Dr. Clute, now 45 years of age, is a graduate of Dartmouth Medical School. He was associated for twenty years with the Lahey Clinic and recently has been chief of the surgical service at Carney Hospital, South Boston. He was secretary of the Section on Surgery, General and Abdominal, of the American Medical Association from 1932 to 1933, when he was elected chairman. Dr. Wiggan will continue as chief of the urologic service at the hospitals.

## MICHIGAN

**State Cancer Survey**—Cancer in Michigan has shown a steady increase greater than the increase in the population as a whole or in that portion of the population aged 30 and above, according to a survey conducted by Dr. Frank L. Rector of the American Society for the Control of Cancer at the request of the Michigan State Medical Society. In 1920 the cancer death rate in Michigan was 84.8 per hundred thousand of population, in 1930 it was 91.3, an increase of 7.7 per cent. The number of deaths increased 42 per cent. During the decade there was an increase in total population of 32 per cent and an increase of 1.3 per cent in the population 30 years of age and over. For the five year period 1929-1933, cancer deaths exceeded deaths from reportable diseases by 33 per cent. The largest percentage of cancer admissions in any one hospital was 5.9 in Saginaw General Hospital, Saginaw, and the lowest was 0.3 per cent in Grosse Pointe Hospital, Detroit, and in St. Mary's Hospital, Marquette. Seven hospitals cared for 1,729 cancer patients during 1933, more than 41 per cent of those hospitalized, Harper Hospital in Detroit leading the list with a total of 626. That cancer patients are being admitted to hospitals in late stages of the disease in the majority of cases is emphasized by the high mortality among these patients compared to deaths from all admissions. The report reveals that on the basis of three living cases for each death not more than 28.6 per cent of cancer patients in the state received hospital care.

The seventy hospitals that reported are located in thirty counties. At the time the survey was made, there were forty-four counties in Michigan without hospitals of twenty-five beds or more. Approximately 12 per cent of the population live in these forty-four counties, 15 per cent of the cancer deaths in 1933 were reported from them, and 10 per cent of the physicians of the state reside in them. There is a known total of 4,103 mg of medical radium in the state and the report urges that this amount be increased an additional 6,000 or more mg.

Eleven hospitals with a bed capacity of 558 reported no necropsies during 1933, although 438 deaths occurred from all causes, 101 cancer patients were treated. Five hospitals reported 100 per cent necropsies on cancer deaths, in no instance, however, were there more than five deaths reported. Tumor clinics organized in whole or in part in keeping with approved recommendations were found at seven hospitals. The report recommends the establishment of one or more tumor registries in the state, and special tumor services for pay and indigent patients in Ann Arbor, Battle Creek, Bay City, Flint, Grand Rapids, Lansing, Muskegon and Saginaw. It further recommends, among other things, a five year educational program among members of the state medical society, in which cancer of a different region of the body would be studied each year.

## MINNESOTA

**Meeting of Surgeons**—The Minneapolis Surgical Society held an all day program at the University Hospital, January 9. In addition to operations by members of the hospital staff and a luncheon meeting at which empyema thoracis was discussed, the program consisted of papers presented, among others, by Drs. Nathaniel Logan Leven, on "Carcinoma of the Esophagus", Owen H. Wangenstein, "Management of Cases of Imperforate Anus," and Melville H. Manson, "The Callender Operation for Amputation in the Lower Third of the Thigh."

**Tuberculosis Sanatorium for Indians**—An annex exclusively for treatment of Indians was recently opened at the state tuberculosis sanatorium in Ah-Gwah-Chung. This is said to be the first sanatorium in the United States for Indians except for one with entirely inadequate facilities opened in 1924 at Onigun on Leech Lake by the U. S. Public Health Service. This building was recently destroyed by fire and its patients have been transferred to the new institution. The Indian annex is under the direction of the state board of control in coopera-

tion with the federal office of Indian affairs, with Dr Herbert A Burns, superintendent of the state sanatorium, in charge. It has a capacity of 170 beds and was constructed with federal relief funds totaling \$250,000. There are about eighty-seven Chippewa Indians now being cared for in the institution, ranging in age from 14 months to 94 years.

### MISSOURI

**Society News**—The Jackson County Medical Society was addressed in Kansas City, December 10, by Drs Clinton K Smith and Arthur Lloyd Stockwell on "Bladder Dysfunction in Children with Special Reference to Enuresis" and William M Kinney, Joplin, "The Pathologic Basis of the Symptomatology in Sclerosis."

**Annual Hodgen Lecture**—Dr Howard C Naffziger, professor of surgery, University of California Medical School, San Francisco, will deliver the annual Hodgen lecture at the auditorium of the St Louis Medical Society, January 14 under the auspices of the St Louis Surgical Society and the Medical Fund Society. Dr Naffziger will discuss 'Malignant Exophthalmos, Its Pathology, Treatment and Late Results'.

### NEW JERSEY

**Society News**—Drs Maurice Brodie and Paul C Colonna, New York, addressed the Bergen County Medical Society at a joint meeting with the Bergen County Public Health and Sanitary Association, Hackensack, December 10 on 'Present Status of Poliomyelitis Vaccine' and 'After-Treatment of Poliomyelitis,' respectively.

### NEW YORK

**Outbreak of Food Poisoning**—Eighty-three persons suffered gastro-intestinal disturbance following a church supper in a village in western New York, November 21. *Health News* reported December 23. Analysis of a portion of turkey, which was the only item of food eaten by all those known to have been ill, revealed a gram-positive aerobic bacillus. The onset of symptoms was sudden, occurring from two to thirteen hours after the meal. It was believed that all the patients had recovered by November 23.

#### New York City

**Fourth Harvey Lecture**—Dr Bernardo A. Houssay, professor of physiology, University of Buenos Aires will deliver the fourth lecture of the Harvey Society at the New York Academy of Medicine, January 16. His subject will be "The Interaction Between the Parathyroid and the Hypophysis and Pancreas."

**Etching Club Exhibit**—The fourth annual exhibition of the Haden Etching Club, an amateur art organization of physicians and dentists, was held at the Leonard Clayton Gallery, November 25 to December 7. Four dentists and nine physicians exhibited etchings. Dr Jacob L. Maybaum received the Frank A. Nankivell Prize for sincerity of execution in his print of the Harlem River, and Dr Benjamin F. Morrow the William Oberhardt Prize for conception and creativeness as evidenced by his 'Peace on Earth, Good Will to Men.'

**Skyscraper Completes Mental Hospital Group**—An eighteen story building replacing the old main building of the Brooklyn State Hospital for the Insane was formally opened November 21. The old building was condemned in 1932 and construction begun on the new one in June 1933. There are now fifteen structures in the hospital group which will care for about 2,000 patients. The new main building will be used for diagnostic work and for acutely sick and infirm patients. It also provides rooms for lectures and classes. Dr Clarence H. Bellinger is superintendent.

**Afternoon Lectures at the Academy**—Dr Harlow Brooks delivered the seventh Friday afternoon lecture at the New York Academy of Medicine, January 3 on 'Evaluation of Focal Infections from the Internist's Viewpoint.' The eighth was given by Dr Aaron S. Blumgarten, January 10 on 'Recent Advances in Endocrine Research and Their Value in Clinical Practice.' Future lecturers will be:

Dr Howard W. Potter, 'Interrelationship of Physical Symptomatology and Personality Disorders,' January 17.  
Dr Isidor S. Rabin, 'Philadelphia: The Problem of the Jaundiced Patient,' January 24.  
Dr Alfred T. Osgood, 'Recent Advances in Diagnosis and Treatment of Genito-Urinary Infections,' January 31.  
Dr Beverly C. Smith, 'Diagnosis and Treatment of Diseases of the Venous System,' February 7.  
Dr Francis Carter Wood, 'Improvements in the Ability of the Medical Profession to Treat Cancer,' February 14.  
Dr Charles Hendee Smith, 'Feeding of Infants and Children by the General Practitioner,' February 21.  
Finner A. McCollum, S.C.D., Baltimore, 'Recent Advances in Vitamin Therapy,' February 28.

### NORTH CAROLINA

**Society News**—Dr John A. Kolmer, Philadelphia, addressed the Mecklenburg County Medical Society, Charlotte, December 13, on 'Poliomyelitis.'—Drs Walter T. Tice, High Point, and Russell O. Lydaj, Greensboro, addressed the Guilford County Medical Society, Greensboro, December 5, on 'Syphilis in General Practice' and 'Surgical Treatment of Chest Conditions,' respectively.

**Personal**—Dr Ralph J. Sykes, Jackson, has been appointed health officer of Surry County to succeed Dr James Allen Whitaker, Rocky Mount, resigned.—Dr Alfred D. Gregg, Tarboro, has resigned as health officer of Edgecombe County.—Dr Roscoe D. McMillan, Red Springs, has been appointed a member of the state board of medical examiners to succeed the late Dr Kirby G. Averitt, Fayetteville.

### OHIO

**University News**—Affiliation of the Shoemaker Clinic, an institution for Negroes, with the University of Cincinnati College of Medicine, was recently announced. The clinic will continue to be financed by the Community Chest and the college of medicine will assume responsibility for the medical services. Physicians serving in the Shoemaker Clinic will be given a status similar to that of physicians in the outpatient department of the Cincinnati General Hospital.

### OKLAHOMA

**Dr Olsen Appointed Medical Director**—Dr Egil T. Olsen, superintendent of Receiving Hospital, Detroit from 1929 to 1934, has been appointed medical director and assistant superintendent of State University Hospital, Oklahoma City, succeeding Dr Hugh Jeter. Dr Olsen was for many years superintendent of Englewood Hospital, Chicago, and was at one time chief of the bureau of hospitals of the Chicago Health Department. While in Detroit he served a term as chairman of the program committee of the Wayne County Medical Society and as president of the Michigan Hospital Association.

### OREGON

**University News**—The University of Oregon Medical School announces a gift of \$2,000 from the Rockefeller Foundation for research in the department of anatomy. The work will be carried out by William F. Allen, Ph.D., and Olof Larzell, Ph.D., professors of anatomy. It has to do with physiology of the brain with particular reference to the sense of smell and associated reactions.

### PENNSYLVANIA

**Society News**—The Hospital Association of Pennsylvania will hold its annual meeting in Pittsburgh, April 22-24.—Dr Stanley P. Reimann, Philadelphia, addressed the Lehigh County Medical Society, Allentown, December 10 on cancer.

#### Philadelphia

**Hatfield Lectures**—The fourteenth Nathan Lewis Hatfield Lecture of the College of Physicians of Philadelphia was delivered January 2, by Drs Eliot R. Clark and Eugene M. Landis on 'The Peripheral Blood Vessels.' Dr Clark discussed 'Growth and Behavior as Observed in Living Animals' and Dr Landis, 'Observations on the Diagnosis and Treatment of Peripheral Vascular Diseases.'

**Professor Appointed**—Dr Lawrence W. Smith, formerly associate professor of pathology, Cornell University Medical School, New York, has been appointed professor of pathology at Temple University School of Medicine to succeed the late Dr John I. Fanz. Dr Smith, a graduate of Harvard University Medical School, Boston, has at various times been instructor and assistant professor of pathology at his alma mater and professor of pathology and bacteriology at the University of the Philippines.

**Society News**—At a meeting of the Philadelphia Neurological Society in November, guest speakers were Drs Norman P. Scala, Washington, D.C., and Ernst A. Spiegel on 'Pupillary Reactions in Experimental Lesions of the Midbrain' and Nathaniel S. Lawger on 'Emotions as the Cause of Rapid and Sudden Death.'—A symposium on neuropsychiatry was presented at a meeting of the Philadelphia County Medical Society, January 8, by Drs Edward A. Strecker who discussed 'Mechanisms in Hysteria and Neurasthenia,' Samuel B. Madden, 'Diagnosis of Organic Neurologic Conditions with Special Reference to Neurosyphilis,' Paul H. I. Hayes, 'Dementia Praecox and Psychoneuroses,' and George Wilson, 'Toxic'

**Psychiatric Reactions and the Mental Symptoms Encountered in Brain Tumors**—The graduate seminar for January 3 was given by Dr Damaso deRivas on "Acute Trichinosis Diagnosis and Treatment" and that for January 10 by David H. Wenrich, Ph.D., and Dr John H. Arnett on "Protozoan Intestinal Parasites".—The meeting of the Obstetrical Society of Philadelphia, January 2, was devoted to discussions of contraception, speakers were Drs Josephus T. Ullom, Thaddeus L. Montgomery, Roy W. Mohler, John H. Dugger and Philip F. Williams.—Dr Hayes E. Martin, New York, was guest speaker at a meeting of the Philadelphia Roentgen Ray Society, January 2, on "Variations in the Technic and Biologic Effects of Fractionated Doses of X-Radiation".—Speakers before the Philadelphia Urological Society, December 16, were Drs Charles M. M. Gruber, on "The Action of Certain Drugs on the Uterovesical Valves (Bell's Muscles of the Ureter)" and John B. Lownes and Samuel Baron, "Ureteral Calculi."

### TENNESSEE

**Society News**—Dr Clarence S. Thomas, Nashville, addressed the Davidson County Medical Society, December 3, on "Allergy in General Practice".—Dr Grayley H. Berryhill addressed the Madison County Medical Society, Jackson, December 3, on "Foci of Infection in the Upper Respiratory Tract".

**Plans to Increase Immunizations**—The Tennessee State Medical Association has announced plans for increasing the number of immunizations against diphtheria, typhoid and smallpox. A representative is to meet with the physicians in every county to urge them to organize campaigns for immunization, details to be worked out by the physicians and the county health officer in counties where there are health units. The state department of health will cooperate by furnishing the necessary biologic preparations as its facilities permit, forms for reporting cases and records, and, in counties having health units, clerical assistance for notifying parents and keeping records. If the physicians prefer that the health unit perform all immunizations, they are urged to help educate parents to have their children protected. In counties without a health unit, the state department will arrange with the physicians, if they desire it, to conduct a short campaign of immunization, this work to be taken over later by the physicians.

### TEXAS

**Dallas Clinical Conference**—The eighth annual conference of the Dallas Southern Clinical Society will be held in Dallas, March 16-19, at the Baker Hotel. Guest speakers announced are Drs Byrl R. Kirklin and Louis A. Buie, Rochester, Minn.; Walter A. Wells, Washington, D. C.; Verne C. Hunt, Los Angeles; Foster Kennedy, New York; Edgar G. Ballenger, Atlanta; Hans Barkan and C. Frederic Fluhmann, San Francisco; Alan G. Brown, Toronto; William R. Cubbins, Chicago; Francis G. Blake, New Haven, Conn.; and John A. Kolmer, Philadelphia.

### VIRGINIA

**Personal**—Dr John W. Simmons, Martinsville, recently received a gift of a cane from physicians of the town and Henry County in honor of his completion of fifty years in the practice of medicine.

### WASHINGTON

**Society News**—Dr William Dock, San Francisco, addressed a special meeting of the King County Medical Society, Seattle, December 27. Dr Dock conducted a three days course in internal medicine at the Seattle General Hospital, December 26-28. Drs Norman W. Clein and Robert D. Forbes addressed the society, December 16, on "Allergy as the Etiology of Frequent Colds and Cough" and "Appendicitis" respectively.

### ALASKA

**Hospital Enlarged**—A new addition to St. Joseph's Hospital, Fairbanks, was dedicated November 18. The building is four stories high and has a capacity of sixty beds which can be extended to eighty. The hospital recently added to its equipment a new ambulance, purchased through popular subscription and maintained at the expense of the city.

**Scarlet Fever in Fairbanks**—Schools, churches, theaters and the University of Alaska were closed and public meetings were forbidden in Fairbanks, January 5, on account of an outbreak of scarlet fever. Twelve persons were ill with the disease and twenty others were suspected of having the infection, newspapers reported. Material was rushed by airplane from Juneau to immunize the inhabitants.

### GENERAL

**Society of Bacteriologists**—Dr Thomas M. Rivers, New York, was elected president of the Society of American Bacteriologists at the annual session in New York, December 28, succeeding Karl F. Meyer, Ph.D., San Francisco. James M. Sherman, Ph.D., Ithaca, N. Y., was elected vice president and Ira L. Baldwin, Ph.D., Madison, Wis., reelected secretary. At this meeting an annual prize of \$1,000 to be awarded for achievement in the field of bacteriology was established by a grant of \$5,000 from the firm of Eli Lilly and Company, Indianapolis. The award will be made to a young man or woman under 31 years of age on April 30 of the year in which the prize is given.

**Society News**—At the annual meeting of the American Society of Tropical Medicine, St. Louis, November 20-22, the following officers were elected: Drs Herbert C. Clark, Panama, Republic of Panama, president-elect; Alfred C. Reed, San Francisco, vice president; and Noel Paul Hudson, Columbus, Ohio, secretary. Dr Henry E. Meleney, Nashville, Tenn., became president. Dr Neil Hamilton Fairley, London, was the society's guest and delivered a lecture on "Recent Advances and Hiatuses in Our Knowledge of Sprue".—The American Speech Correction Association held its annual convention in Chicago, December 28-January 2. Among speakers were Dr Meyer Solomon, Chicago, on "Stuttering, Emotion and the Struggle for Equilibrium"; Dr Smiley Blanton, New York, "Treatment of Stuttering"; Robert W. West, Ph.D., University of Wisconsin, Madison, "A New Neon Tube Strobolaryngoscope"; Maurice H. Krout, Ph.D., Chicago, "Emotional Factors in the Etiology of Stammering"; Harry J. Helman, A.M., Syracuse University, Syracuse, N. Y., "The Principle of Reeducation in Speech Correction"; and Charles H. Voelker, A.M., Hanover, N. H., "Clinical Research on Dyslogia Mongolia".

**Five Year Program to Reduce Automobile Accidents**—A five year national campaign to reduce motor vehicle deaths at least 35 per cent by 1940 opened, January 1, under the auspices of the National Safety Council. The drive will be localized for each state and for practically each city, where closest cooperation will be maintained with public officials, traffic safety leaders, safety groups, educational leaders, civic organizations and interested individuals. The campaign will be largely educational and will offer new ways of appeal to the motorist to arouse a sense of responsibility and sportsmanship. A definite statewide school program will be recommended for each state, together with the organization of state safety councils and localized safety organizations in towns and cities. The adoption of uniform laws, including standard drivers license legislation, will be urged, together with adequate administration of traffic laws including state highway patrols. The standardization of accident reports will also be undertaken, as well as provisions for more complete accident statistics and their interpretation and application. The number of people killed in 1935 promises to approach the total for 1934, when 36,000 persons were killed and 1,250,000 injured, of the injured 150,000 have been permanently crippled. State programs have already been most effective, it was stated, twenty-three states have reported fewer deaths for the first nine months of 1935 than for the corresponding period of last year, including Rhode Island with a 31 per cent decrease, Oregon, 16 per cent, Massachusetts 14 per cent and Minnesota, 11 per cent. A national conference on land, sea and air accidents to promote a drive to relieve the present "distressed situation," was held, December 18 in Washington. It was attended by representatives of the automobile industry and civic associations.

**Research on Dementia Praecox**—The National Committee on Mental Hygiene recently announced details of its program of investigation into the causes of dementia praecox, which will be financed by a gift of \$40,000 from the Supreme Council of Thirty-Third Degree Scottish Rite Masons, Northern Jurisdiction (THE JOURNAL, Oct. 19, 1935). Dr Nolan D. C. Lewis, formerly of St. Elizabeth's Hospital, Washington, D. C., and recently appointed assistant medical director of the New York Neurological Institute, will be coordinator of the program under the direction of a special committee. This committee consists of Mr. Melvin M. Johnson representing the Masons; Dr. Arthur H. Ruggles, New York, president of the National Committee for Mental Hygiene; Dr. Clarence M. Hincks, general director of the committee; Dr. Adolf Meyer, professor of psychiatry, Johns Hopkins University School of Medicine, Baltimore; Dr. William A. White, superintendent of St. Elizabeth's Hospital, Washington; Dr. Winfred Overholser, state commissioner of mental diseases, Boston; Dr. Albert Moore Barrett, medical director, State Psychopathic Hospital,

University of Michigan, Ann Arbor, and Dr Edward A Strecker, professor of psychiatry, University of Pennsylvania School of Medicine, Philadelphia. The projects to be undertaken include the following:

Investigation of selected cases of dementia praecox with respect to heredity constitutional factors, body chemistry, and social elements

Investigation of mental symptoms in different types of the disorder

Analysis of the type of thinking peculiar to the schizophrenic personality

Study of the mechanism of hallucinations and correlation of neurophysiologic organizations and states with disturbances of behavior

Studies of children to separate malignant from benign aspects of behavior of problem children over a long time to learn how they differ from average children in chemical physical social, psychologic and educational factors, and of newly born infants to observe differences in physical and mental behavior

Study of relationship between endocrine and hormone factors and their possible connection with emotional shifts

Study of physiology of the nervous system by biophysical methods with relation to states of emotional tension, stupors and catatonic symptoms

Neuropathologic study of the brain utilizing tissues obtained from necropsies

A complete study of all types of tissues obtained from necropsies on dementia praecox patients the results to be compared with observations in other mental and physical disorders and correlated with personality expressions observed in the patients during life.

**Report of Science Advisory Board**—Establishment of a permanent scientific advisory service to the government was urged in the final report of the Science Advisory Board, which ended its service December 1. The activities of the temporary board have demonstrated the opportunities for this type of service. Karl T Compton, Ph D, president of Massachusetts Institute of Technology, Cambridge, pointed out in his letter of transmittal as chairman of the board. Contained in the volume are reports of special committees of the board on studies made in thirteen fields, one of which deals with the scientific work of the U S Public Health Service. The committee consisted of Drs Milton J Rosenau, Boston, Simon Flexner, New York, and Thomas Parran Jr, Albany, N Y. After outlining the achievements and present activities of the service the committee pointed out that study of many problems must be declined at present because of lack of space, personnel and resources. The following were cited as pressing needs: investigations in stream pollution, cancer, statistics, malaria, public health methods food child hygiene, industrial hygiene, heart disease, venereal diseases tuberculosis epidemiology, dental studies and laboratory investigations. It was recommended that the appropriation for the scientific work of the public health service be increased by \$2,000,000. The study brought out the fact that there is considerable duplication between certain aspects of the work of the public health service and other government agencies, notably the division of vital statistics in the Bureau of the Census and the maternity and child health division of the Children's Bureau. The committee recommended further study of these duplications with a view to consolidation so as to make more effective the government's public health work. In an introductory statement the board reported a fair degree of accomplishment in fulfillment of its recommendations. One case in which its efforts have thus far been unavailing was the recommendation to the President of a program for 'putting science to work for the national welfare.' In this program was included a suggestion for the immediate appropriation of \$1,750,000 to be distributed by the National Research Council as grants-in aid of research in non-profit-making institutions. A list of typical research projects that could profitably be undertaken, in the opinion of the board, included the social and economic aspects of tropical disease, the field of genetics, food technology and sewage disposal, as well as the well known medical problems for which funds are inadequate. The Science Advisory Board was created by President Roosevelt July 31, 1933, under the jurisdiction of the National Academy of Sciences and the National Research Council for a period of two years, and the appointment was later extended to December 1.

### CANADA

**Society News**—Dr John Beattie, conservator of the museum and director of research Royal College of Surgeons of England, addressed the Toronto Academy of Medicine November 4, on 'The Etiology of Traumatic Shock.' Dr Howard C Moloy, New York, addressed the academy, December 3 on 'Variations in the Female Pelvis from the Anthropological and Obstetrical Viewpoint.'—Drs George Lyall Hodgins and Frank A Turnbull addressed the Vancouver Medical Association, December 3, on diabetes and early diagnosis of brain tumors, respectively.

**Alberta Becomes Unit of National Society**—The Alberta Medical Association at its annual meeting in Edmonton in September voted to amalgamate with the Canadian Medical Association and will henceforth be known as the Canadian Medical Association, Alberta Division. Drs Thomas C Rout-

ley, Toronto, general secretary of the dominion association, Jonathan C. Meakins and Wilham V. Cone, Montreal, and Robert I. Harris, Toronto, attended the meeting. At the annual meeting of the British Columbia Medical Association in Vancouver in September a resolution was adopted approving a similar reorganization of that society. Dr Andrew H. Meneely, Coronation, was chosen president-elect of the Alberta Division and Dr Daniel S. Macnab, Calgary, was reelected president.

## Government Services

### Bust of Dr Keller

A bronze bust of Col William L. Keller, until recently head of the surgical service at Walter Reed General Hospital, Washington D C, has been installed in the entrance lobby of the main building of the institution, as a gift of Brig Gen Hugh S. Johnson. Colonel Keller was retired from active duty October 31, and was made surgical consultant under a special law enacted May 15.

### Annual Report on Health of Army

Automobile accidents continued to lead the causes of death in the U S Army during 1934 according to the annual report of the surgeon general. Sixty deaths were attributed to this cause, a marked reduction from the total of eighty reported in 1933. Pneumonia, the first disease to appear in the list of causes of death, stood in fourth place, with a total of thirty-four deaths. Airplane accidents and suicides occupied second and third places with totals of fifty-six and fifty-two respectively. Bronchitis led the causes of admission with a total of 3,799, replacing athletic injuries which led the list last year with a total of 3,698. Third on the list of causes of admission was gonorrhea, with a total of 2,768. There were 544 deaths among army personnel, giving a rate of 4 per thousand, as compared with 577 deaths in 1933. Of the 543 deaths, 275 were due to diseases and 268 to external causes. There were 1,363,591 days spent in hospitals as compared with 1,355,245 the previous year. In addition there were 1,505,360 hospital days chargeable to beneficiaries of the Veterans Administration Soldiers Home members of the National Guard, Officers' Reserve Corps, Reserve Officers' Training Corps, Citizens' Military Training Camps, Civilian Conservation Corps, and civilians entitled to treatment. There was considerable increase in the amount of professional work done. 7,860.2 patients in hospital daily as compared with 6,474.9 in 1933. 430.3 in quarters as compared with 394.9 in 1933 and 6,559.9 outpatient treatments as compared with 6,330.8 in 1933.

The average daily strength of the army during 1934 was 134,716, not including 5,938 reserve officers on duty with the Civilian Conservation Corps. During the year 130 officers, eight nurses and 2,165 enlisted men were separated from the service on account of disability. The discharge rate (17 per thousand) was the highest since 1929 and compared with 13.3 for 1933. Tuberculosis with a total of 240 was first in the list of causes of discharge. This is the first time in ten years that dementia praecox has not led the causes of discharge. This disease in 1934 was responsible for 177 discharges, as compared with 223 in 1933. There were 1,483,120 days lost from duty during 1934, as compared with 1,464,598 for 1933. Injuries caused the loss of 295,346 days, while diseases accounted for 1,187,774. The noneffective rate for the total army was 30.2 as compared with 29.4 in 1933. The average time lost from duty per case was 18.2, as compared with 18.5 during the previous year. Gonorrhea, responsible for 137,458 days lost, continued to lead the causes of loss of time. Among diseases that caused the greatest loss of time per case, tuberculosis was first, with an average of 254.4 days. This is an improvement over the previous total of 343.1 resulting from a change of policy which formerly kept a man in hospital until expiration of his term of service.

There were only 1,874 admissions for influenza as compared with 3,507 in 1933 and 8,759 in 1932. Venereal diseases have been decreasing for several years the report states until a new low rate, 34.4 was achieved in 1933. This same rate appears for 1934. There were 4,632 admissions for venereal diseases with 206,784 days lost from duty. A slight increase in the admission rate for alcoholism was noted for the entire army over the rate for the previous year 6 and 5.6 respectively. Eighteen drug addicts were detected during the year, as compared with twelve in 1933.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Dec 7, 1935

#### Asthma Research

The Asthma Research Council has published an important report on its work since its foundation in 1927, written by one of its vice presidents, Sir Humphry Rolleston. The council was founded in an unusual way—by sufferers from asthma. In 1927 the late earl of Limerick and Capt F L M Boothby, both long sufferers, wrote to the press pointing out the great suffering caused by asthma and the need for organized research. A meeting that was called was attended by sufferers from asthma and by certain physicians, a committee was appointed, and funds were collected. The program of research included (1) formation of asthma research centers, (2) biochemical investigation, and study of (3) asthma in children, particularly the association with cyclic vomiting, epilepsy, migraine and skin disease, (4) sensitization by animal, vegetable or other foreign matter, (5) physical methods of treatment, including medicated inhalations, ultraviolet radiation, x-rays, diathermy and breathing exercises, (6) relation to other respiratory diseases (7) the effects of diet, (8) alleged cures, including secret remedies, (9) family histories.

#### EXERCISES IN THE TREATMENT OF ASTHMA

The treatment by physical exercises has proved so successful that the council has issued an illustrated pamphlet on it. This treatment is based on the fact that during an attack of asthma the lungs become overdistended. The object of the exercises is to restore the lungs and chest cavity to the normal size. The asthmatic patient is therefore taught to use the lower as well as the upper part of the chest in expiration and to breathe with the diaphragm to a greater extent. At the Guy's Hospital asthma clinic exercises have played an increasing part in treatment. All patients go through a probationary period of at least two months before any specific treatment is adopted. During this period they are given general advice as to diet, hygiene and elimination of possibly deleterious proteins. Any dust, such as orris root, feathers or horse dander, which is shown by skin tests to be a probable stimulus of the attacks, is eliminated as far as possible. In cases of food sensitization the diet is adjusted. If attacks are frequent, ephedrine or epinephrine is prescribed. Regular attendance at the clinic is secured by giving a series of subcutaneous saline injections. During a two months period of observation about half the patients lost their asthma or had fewer attacks. But when the period of observation was prolonged to six months a relapse occurred in about one fourth of the patients who had improved. Improvement was more frequent when the patient was young, when the attacks were infrequent, or when the disease was limited to a particular season.

#### CHEST DEFORMITIES INDUCED IN ASTHMATIC PERSONS

In a radiologic study at the asthma clinic of the Leeds Infirmary, thoracic deformities due to overinflation of the chest are often observed in asthmatic patients. They include widening of the anteroposterior diameter of the chest, dorsal kyphosis and an anterior "pigeon deformity." But on clinical examination early chest deformities are seldom obvious, as the soft parts mask slight changes in the bony framework. The deformities can be detected only by careful examination of the roentgenogram after outlining the contour of the ribs and transposing the contour to a sheet of white paper. The degree of overinflation of the chest is usually in proportion to the duration of the illness and to the severity and frequency of the attacks of asthma. The deformity is often asymmetrical. The

upper chest is usually more expanded than the lower, producing a deformity quite different from the barrel shaped chest of emphysema. The asthmatic chest is expanded in its upper half and narrow at its base, taking the shape of an inverted flask. The intercostal spaces are irregularly expanded in asthma, and their widening does not proceed regularly from above downward, as in emphysema, but occurs in haphazard fashion, it also occurs asymmetrically.

The chest deformities of asthmatic patients are often not permanent and may yield readily to treatment. Breathing exercises are very effective in correcting the deformities. These observations suggest that the overexpansion of asthma is not due to true emphysema but to functional inflation caused by the attacks and subsiding with them.

#### Explosions in Operating Room

The Medical Research Council has sought the assistance of the National Physical Laboratory to investigate the subject of the electrification of equipment used in operating rooms. In America, electrification by frictional means is regarded as a serious risk, but in this country the atmosphere is not so dry, and one or two serious explosions of anesthetic gas have been regarded as the result of sparks due to the sudden discharge of electrified equipment. The importance of the subject and the want of definite knowledge have induced the Medical Research Council to seek more information on the nature of the risk and the means of prevention. So far inquiries have shown that the staffs of operating rooms have occasionally received uncomfortable electrical shocks from such apparatus as anesthetic couches. It has been shown by experiment that these can become electrified to such an extent that discharge in the form of a spark is sufficient to ignite certain anesthetics. There is also the possibility of electrification being generated by the use of modern anesthetic apparatus. It has been found that the staffs of operating rooms are likely to experience cases of electrification which do not come to the notice of the medical staff, as their duties are more likely to include the movement of blankets, mattresses and the like, which may give rise to electrification. Superintendents of hospitals are invited to collect information of electrification of this nature and to forward it to the laboratory to assist in determining the conditions in which it may arise and the means by which it may be avoided.

#### Medical Plan for Oxford Undergraduates

Medical provident schemes have become common in recent years. In the *Times* Sir E. Farquhar Buzzard calls attention to the Oxford University Provident Association, which was inaugurated in 1932 and of which he is the chairman. The association was formed for the reasons that the position of the Oxford undergraduates with regard to sickness or accident was extremely unsatisfactory, that, for economic reasons, medical attention was not sought until serious and avoidable complications had arisen, and that physicians were handicapped in obtaining proper nursing and investigations, owing to the financial anxieties of their patients. Now for members of the association the position is entirely changed. They do not hesitate to seek help at the time when it is most important that they should obtain expert advice and care. The experience of three years has shown that a premium of \$15 a year is sufficient to secure such substantial benefits, among others, as \$30 a week for a period up to four weeks toward the cost of maintenance in a nursing home, a contribution not exceeding \$100 toward the cost of a surgical operation, and half the fees of general practitioners subject to a maximum of \$40 per annum. These benefits are payable for sickness and accident in any part of the world and are not restricted to the period of residence at Oxford. There are nearly 1,500 members of the association, and, during the year ended July 1935, 724 claims affecting 534 members, amounting to \$17,300 were dealt with.

## PARIS

(From Our Regular Correspondent)

Nov 29, 1935

## Expectorants and Expectoration

The rather important clinical question of expectorants and expectoration is the subject of an article by Gordonoff of Berne in the October *Annales de médecine*. Since 1928, bronchography has been employed to determine not only how foreign substances such as iodized oil injected into the bronchi are expelled but also how the various expectorant drugs act when observed radiographically. Instructive prints of films illustrating these points accompany the article. Through a tracheotomy incision, the iodized oil is introduced into the trachea of rabbits and other animals, so that the distribution can be followed by roentgenoscopy. Two methods of elimination of the foreign body were found, one is purely mechanical, the "excretomotor" mechanism, and the other, secretory, resulting in liquefaction of the injected substance, termed "secretolytic."

As to the first of these mechanisms, much importance was formerly ascribed to the vibratory action of the ciliated epithelium lining the bronchi. The author has found that these structures play an accessory but less important part under normal, and but little in pathologic conditions. The role of coughing in expectoration has been thoroughly studied by Rohrer of Zurich, who found that coughing aids in getting rid of secretion in the bronchi but has no influence on that in the alveoli. Gordonoff believes that coughing, like the ciliated epithelium, has only a secondary importance in expectoration. He is opposed to the existence of a peristaltic action in the musculature of the bronchi and believes that the chief factor in getting rid of secretions is the normal respiratory movement. When this is paralyzed there is change in position of the secretions as observed roentgenoscopically. For this reason the administration of opiates interferes with the elimination of secretions. The secretolytic method of expectoration is due to the liquefying action of the bronchial glands and the faculty of resorption of the pulmonary tissues.

Drugs given as expectorants usually act for the major part on the excretomotor or on the secretolytic mechanism. Ammonium chloride is considered the best expectorant. It has an excretomotor and also a secretolytic (by stimulation of the bronchial secretion) function through vagus stimulation. Various sugars have a marked secretolytic action. Opiates are contraindicated because they interfere with respiratory movements and thus, according to Gordonoff, they counteract the fundamental factor of good expectoration, which is a good respiratory action.

## Physical Therapy of Uterine Bleeding

At the fourth French Gynecologic Congress in June a symposium was presented on genital hemorrhages excluding those due to neoplasms and pregnancy.

Courriades of Bordeaux spoke on roentgen therapy, which acts by causing atrophy of the follicle and in giving rise to a form of obliterating endarteritis of the uterine vessels. The follicle changes may progress to a complete destruction of the ovary with resultant premature menopause. Hence every effort should be made to avoid such an end result of roentgen therapy. The speaker advocated irradiation of the spleen as an adjuvant measure, which is followed by an increase in the blood platelets as well as stimulation of the inhibitory action of the spleen on the follicular secretion as reported by Hornung and von Mikulicz. Similar irradiation of the hypophysis is indicated to check the stimulating action of this endocrine structure on the ovary.

Binet of Nancy advocated the use of radium in metrorrhagias without local cause. Menstruation occurs once or twice but then ceases. If it does not, hysterectomy is indicated especially for patients who cannot submit to prolonged radium treatment.

Douay of Paris also endorsed the use of radium if medical and endocrine treatment has been of no avail. A microscopic examination should always be made after curettage, before beginning roentgen or radium therapy. It enables one to differentiate between hyperplastic metritis due to follicular hypersecretion and a deciduousform endometritis due to lutein hypersecretion. In both conditions, radium will check the ovarian hyperactivity and stop the uterine bleeding.

## Excision of Portal of Entry in Treatment of Tetanus

Mironesco of Bucarest at the October 15 meeting of the Académie de médecine (Paris) made a plea for the excision of wounds that formed the atrium of infection for tetanus. In one case the specific bacilli had been found in stained specimens of pus from the wound, 200 cc of antitetanic serum was given and on the following day the wound was excised and two white mice and two guinea-pigs were inoculated with portions of the tissue. The animals did not develop tetanus. A comparison was made between cases in which the antitetanic serum had been given and chloral alone and those in which, in addition, the wound of entrance was excised. In the former group there were thirty-three cases with a mortality of 20 per cent, while in the latter group there were fifteen cases without a death. From 30,000 to 40,000 units of antitetanic serum was given to the patients in both groups.

## Hemiplegia Following Artificial Pneumothorax

In the July 19, 1935, letter two cases observed by Prof. Emile Sergent were cited in which a hemiplegia appeared immediately after an exploratory puncture for pulmonary abscess. Both patients recovered from the cerebral complication, which Sergent believed to be due as much to spasm of the cerebral vessels as to an embolus composed of blood and air.

At the June 6, 1935, meeting of the Société de neurologie of Paris another case was reported by Ameuille, Lhermitte and Kudelski. The patient was a woman, aged 34. During insufflation of the pleural cavity (artificial pneumothorax), epileptiform convulsions appeared followed by coma and a left-sided hemiplegia. Death occurred three days later. The necropsy revealed a diffuse and extensive softening of that portion of the right half of the cerebrum supplied by the sylvian and anterior cerebral arteries. The opinion was expressed that the convulsions and hemiplegia were not the result of a pleural reflex but due to air embolism. In the discussion, Thomas stated that it cannot be denied that epileptiform convulsions can be due to reflex peripheral irritation. On the other hand, in ordinary hemiplegia there is always an accompanying element of spasm of the cerebral vessels, which results in exaggeration of the initial symptoms and which, at the same time, explains some of the marked unexpected recession of symptoms.

## Cancer of Liver in a Child

Nobécourt and Ducas report a case of primary hepatic cancer in a boy, aged 5 years, in the October 1935 *Archives de médecine des enfants*. About a month before admission to Professor Nobécourt's service in the Children's Hospital the child experienced slight pain in the lower right side of the chest and corresponding upper abdominal quadrant. The pain was accompanied by nausea and at times by vomiting. In the right upper quadrant a large mass could be felt the upper limit of which could not be distinguished from the liver. Two discrete nodules were palpable in the para umbilical area. The lower border of the mass was soft and felt like that of the liver. With the aid of pycnography it was possible to exclude the right kidney as the seat of the tumor. Exploratory laparotomy confirmed the diagnosis of hepatic neoplasm. Death occurred shortly after this operation. The necropsy revealed the presence of a very large liver the surface of which did not present any nodules. Section, however, revealed many poorly demarcated

nodules, varying greatly in size from that of a filbert to that of a lemon. Some of these were firm and others with a softened, almost cystic center. Microscopic study revealed that the nodules showed the typical structure of a primary carcinoma of the liver.

### BERLIN

(From Our Regular Correspondent)

Nov. 11, 1935

#### Law for the Prevention of Hereditary Disease

In supplementation of the ordinances for the prevention of offspring with hereditary defects, the law of Oct. 18, 1935, "pertaining to the protection of the hereditary health of the German people" provides for the refusal, in certain cases, of marriage licenses to applicants who do not, from the standpoint of health, measure up to normal standards. Such refusal will be in order (1) in the event that either contracting party has an infectious disease that awakens a fear that the other party may suffer damage to health or that the offspring may become infected. This envisages chiefly tuberculosis and acute venereal diseases. A license will be denied (2) if one of the applicants, although of age, has been placed under a legal guardian or (3) if one of the applicants is suffering from a mental disorder that makes the proposed marriage appear undesirable from the standpoint of public welfare. These provisions if strictly applied, will exclude from marital propagation the psychopaths who escape the application of the sterilization law. They make it possible to debar from marriage all alcohol addicts. Heretofore the marriage of persons who, although of age, have been placed under legal guardians has depended on the consent of the guardian. There were cases in which it was thought that the future marital partner would exert a favorable cultural influence on the person for whom a legal guardian had been appointed, and in which the guardianship could be continued in spite of the marriage. It appears that in the future such a marriage will not be possible until the legal guardianship has been abolished.

Finally, in section 4 it is stipulated that a license for a marriage will not be issued if one of the applicants is affected with a hereditary disease within the scope of the law for the prevention of offspring with hereditary defects. The prohibition does not, of course, apply to persons who have been sterilized, as there is no objection to the marriage of sterilized couples.

#### Pregnancy in Relation to Diabetes

That a woman with severe diabetes should become pregnant was an exceedingly rare occurrence before the introduction of insulin. Since the use of insulin has become general, diabetic women who formerly would have remained sterile become pregnant and give birth to healthy children. A fear has, however, been expressed that offspring with a predisposition to diabetes may thus be born, and that insulin will increase the number of persons menaced by the disease. An observation, however, recently reported by Stepp throws a different light on the problem. A woman affected with diabetes became pregnant. During her pregnancy it was found that her need of insulin was much reduced. The child died at birth from cerebral hemorrhage. Necropsy revealed the presence of an enlarged pancreas. Heiberg ascertained that, instead of an expected 15 Gm. the pancreas weighed at least 5 Gm. A detailed examination showed that the various lobules were not enlarged. One was forced to conclude that the island apparatus had undergone at least a threefold enlargement. The assumption appeared justified that a compensatory enlargement of the pancreas had occurred and that the fetus had supplied the mother with insulin from its superfluous store. After her confinement, it was significant that the mother's need of insulin again increased. A few years later the woman again became pregnant. The second pregnancy resulted in the birth of a

living child. In this case also the child had apparently supplied the mother with insulin. Soon after birth the child gave evidence of disturbances of well being, which were diagnosed as hypoglycemic conditions induced by the enlargement of the pancreas and resembling conditions occasionally observed in connection with insulin therapy. The prompt relief afforded by an intravenous infusion of dextrose confirmed this assumption. Thus the conclusion appears justified that the same conditions affected the second child as the first. These observations show that possibly the offspring of diabetic women, instead of being menaced by diabetes, will be well protected against this disease, owing to a compensatory hypertrophy of the pancreas.

#### The Composition of Pneumothorax Gases

Professor Schwenkenbecher, in Marburg, discussed recently the question of the best gases for pneumothorax. Since the research of Savy in 1823 it has been known that the gas mixture of a spontaneous pneumothorax soon takes on a composition different from the atmospheric air, owing to the decrease in the oxygen content and the increase in the carbon dioxide. Analyses show differences between "closed" and "open" spontaneous pneumothorax. In the former, investigators have found, on the average, 167 per cent carbon dioxide and 26 per cent oxygen. In the latter, in the presence of a communication through a pleuropulmonary fistula with the atmospheric air, they found 28 per cent carbon dioxide and 167 per cent oxygen. In closed pneumothorax the carbon dioxide valuations increase in the presence of inflammatory processes. More recent analyses, made by a reliable method about twenty years ago, revealed, in artificial, therapeutic pneumothorax, shortly after the insufflation, a mixture consisting of about 4 per cent oxygen, 6 per cent carbon dioxide and 90 per cent nitrogen, irrespective as to whether the pleural space had been filled with air, hydrogen, oxygen or carbon dioxide. A pneumothorax may show the same composition after the lapse of years. On the entrance of an exudate the carbon dioxide content of the mixture increases as a result of inflammatory changes in the pleural space, while the oxygen content is reduced to small quantities. There is thus a distinct difference between "dry" and "moist" pneumothorax. The marked constancy of the oxygen and the carbon dioxide valuations is based in the main on a gas exchange, which takes place in accordance with physical laws, between the blood and the tissue gases, on the one hand, and the pneumothorax air on the other. Especial interest attaches to the fact that, when the primary pneumothorax insufflation was accomplished with pure oxygen, such large quantities of nitrogen leave the blood and the tissues to replace the resorbed oxygen. It is evident, therefore, that the nitrogen tension in the blood and the body tissues should be studied more carefully. The gas mixture consisting of 4 per cent oxygen, 6 per cent carbon dioxide and 90 per cent nitrogen appears, within certain limits, to be practicable and effective. Irritation of the pleura is, with this gas mixture, prevented as far as can be expected, while it appears that the intervals between the several reinsufflations can be extended. It would be a distinct advance in pneumothorax therapy if it should prove possible, through the use of special gases or gas mixtures to retard to an appreciable extent the resorption of the pneumothorax gas.

#### Clinical Experiences with Influenza

Professor Stein ordinaris in internal medicine at the University of Heidelberg, has pointed out that, strange to say, he observed no leukocytosis in patients examined during the influenza epidemic last spring. If a leukocytosis was discovered it was found to be the precursor of an influenzal complication. The leukocytosis appears before the localization of such a complication is recognized. Pulmonary complications are the most frequent. Such influenzal pneumonias differ greatly from ordi-

nary pneumococcal pneumonia in their bacteriologic aspects, in the temperature changes, in the leukocytic reaction and in the general reactions. It is evident that one is dealing with a new type of lung infection, the nature of which must be clarified by further bacteriologic researches. The critical stage for these influenza patients was during the subsidence of the fever, which is unusual. If patients in whom the subsidence of fever is taken as a sign of recovery return too early to their work, one often observes in these patients severe injuries, particularly of a vasomotor nature, leading sometimes to collapse.

## AUSTRALIA

(From Our Regular Correspondent)

Oct 21, 1935

### Annual Meeting of British Medical Association at Melbourne

Abstracts of other papers read at the annual meeting of the British Medical Association in Melbourne appeared in *THE JOURNAL* Nov. 16 and 30, 1935, and in last week's issue.

#### FRACTURES OF THE NECK OF THE FEMUR

When Smith-Petersen demonstrated his new pin and nail in London in July 1929, not many were greatly impressed with either the theory or the practice that he proposed. No one had realized that his proposition was going to dominate the whole situation in a few years. Prof. E. W. Hey Groves opened the discussion on this subject before the section of orthopedics. In a recent case (within one week of the injury), when the patient was not too old or feeble, and when there was no marked absorption of the neck or necrosis of the head, the Smith-Petersen technic was the treatment of choice. This technic owed its efficiency to three points: 1. The radiating blades of the nail fixed the fracture in regard to rotation in a way that no other method did. 2. The shape of the nail made it possible to get complete penetration of the neck and head with the minimum of drilling or destruction. 3. The impaction involved in first driving in the nail and then hammering the fragments together insured the closest possible apposition. The original Smith-Petersen operation exposed the seat of the fracture, permitted the removal of intervening fibrous tissue, and allowed fine details of adjustment, none of which were permitted by the more recent modifications. The blind plaster method never had achieved more than a 50 or 60 per cent proportion of success. As regards alternatives, the use of a spica was preferred to that of a walking caliper.

#### OSTEO ARTHRITIS OF THE HIP AND KNEE JOINTS

All conditions classified as osteo arthritis and rheumatoid arthritis were the result of a primary osteitis and the arthritic changes were secondary. Dr. J. Forbes Mackenzie of Melbourne based his treatment on this theory and treated the osteitis by drilling the bone in the neighborhood of the joints. He had treated 160 patients and in 80 per cent an improvement had been recorded. The cartilage, unless hopelessly damaged, recovered as a result. The older the patient the worse was the prognosis.

#### THE USE AND ABUSE OF HYPNOTIC DRUGS

Sir William Wilcox of London had been so impressed by the toxic effects of the drugs of the barbituric acid and sulfonmethane groups that he rarely prescribed them alone. Barbiturates should not be used in pneumonia. They were not strong enough and indeed, pneumonia had sometimes followed their use. The experience of other speakers confirmed this. He recommended morphine and atropine in pneumonia especially during the first few days when sleep was so essential. Prof. R. D. Rudolf of Toronto said that the chief value of hypnotics was to reduce the irritability of the nervous system to noise or pain. Often by reducing noise or by relieving pain by some simple means one could avoid the use of hypnotics.

#### PREMEDICATION AND BASAL NARCOSIS

Dr. F. W. Green of Melbourne reduced the Australian view to simple terms by stating that 1. Nervous and highly strung patients and especially children, should receive some form of sedative drug treatment to ameliorate the psychic effect that was inevitable while they were waiting to be brought into the operating room. 2. Adequate premedication greatly decreased the amount of general anesthetic subsequently needed. 3. There was no form of premedicinal treatment that was applicable to all cases, each case had to be considered as a separate entity and a suitable drug had to be administered. Chlorbutanol in doses of from 10 to 15 grams (0.65 to 1 Gm.) had been found useful. Sodium amylal should be given only to robust and virile types. It caused a fall in blood pressure. All barbiturates had an inconstant action. Atropine should be used as a routine premedicant except when the basal metabolic rate was high.

Dr. W. I. T. Hotten of Sydney found that the mortality rate in a series of thyrotoxic cases was twice as high with tribromethanol narcosis as with paraldehyde.

Sir William Wilcox of London drew attention to the necessity of fortifying the liver against the toxic action of narcotic drugs. He advised dextrose and alkalis. Anesthetists should realize that they were giving a toxic drug. Patients with *Bacillus coli* infection or low blood pressure were susceptible to toxic drugs. He had found that paraldehyde caused hematemesis.

#### INTUSSUSCEPTION

A mortality of 11 per cent over a thirteen year period (486 cases) had been reduced to 6.6 per cent by adopting a preliminary injection of saline solution to attempt reduction before operating. Dr. R. L. Hipsley of Sydney said that the maximum age incidence was between 6 and 9 months. There was recurrence in 9 per cent of cases between one week and eighteen months after reduction. The treatment of choice was hydrostatic reduction under ether anesthesia. About an equal number of intussusceptions began at the caput caeci, at the ileocecal sphincter and in the lower part of the ileum. Among the 486 patients treated, death occurred in all cases in which resection had been attempted, in all cases in which a complete laceration of the bowel had occurred during attempted reduction, and in several cases in which the operation had presented no difficulty and the reduction had been affected with ease. Death in the last-mentioned group had been due either to intestinal obstruction or to general peritonitis. The pressure of a column of water not more than 3 feet 6 inches high was used and was obtained by suspending a douche can at this height above the child. No lubricant was used on the catheter that was inserted into the rectum. Over 60 per cent of intussusceptions were invariably reduced by this method and in 40 per cent the diagnosis of complete reduction was made. In about 20 per cent of reduced cases reduction had to be verified by making a small incision. When reduction occurred, some of the saline solution passed through the ileocecal sphincter and produced a uniform distention of the abdomen, which was obvious on inspection or could be demonstrated by measurement of the circumference before and after treatment. A teaspoonful of powdered charcoal was sometimes left in the stomach and when reduction had occurred this could be recovered by washing out the large bowel four or five hours later. A thin opaque enema was sometimes used instead of saline solution and roentgen examination was used for diagnosis of reduction, but Dr. Hipsley did not recommend this method because valuable time was wasted and it had no advantages over the demonstration of the distended abdomen. An attempt at reduction by injection was made only after the operating room, the surgeon and the patient were prepared for an open operation. Only one perforation had occurred in a series consisting of more than 300 patients.

## THE SOCIAL AIMS OF MENTAL HYGIENE

The nineteenth century had discovered the child, the twentieth would be responsible for the discovery of the parent. Prof Harvey Sutton of Sydney and other speakers in the section of medical sociology urged the institution of child guidance clinics, and the recognition of the vital "preschool" period. The necessity for corporal punishment was overcome by a better understanding between teacher and pupil.

Dr R. S. Ellery of Melbourne said that much social maladjustment could be prevented by a wiser training and understanding of children. A movement that aimed at the conservation of a nation's mental health must touch at some point or other every department of human activity. He criticized criminal correction and said that when a judge punished a criminal he was punishing something criminal in his own subconscious mind. The duty of disciples of the mental hygiene movement was to endeavor to alter the country's attitude toward crime and punishment and to seek to find and cure the individual maladjustments that were conditioning criminal behavior.

Dr N. A. Albiston of Melbourne disturbed Professor Sutton by stating that in Australia, where the family was at least nominally recognized, its status had been weakened by such social institutions as the nursery school and the kindergarten and by such legal enactments as those relating to compulsory education, vaccination, health inspection and its consequent remedial measures. The policy of child guidance clinics should be to conserve as far as possible the parent's capacity to deal with the problem.

Dr E. Kaye Le Fleming of London disagreed with Professor Sutton on the question of corporal punishment. "In the light of considerable experience, including the charge of a large public school and several other schools, I am of the opinion that corporal punishment is necessary," he said. "Without some measure of it I cannot see how discipline can be obtained."

## STAPHYLOCOCCIC INFECTIONS OF THE SKIN

Before the section of dermatology, Dr J. Ivan Connor advocated the use of staphylococcus formaldehyde-treated toxoid in the treatment of related skin infections. He commenced with an injected dose of 0.05 cc and increased the amount cautiously each week. Eight injections usually cured furunculosis.

## MYCOLOGIC INFECTIONS

In Sydney, 60 per cent of the population was infected with tinea, but of this number only 10 per cent were symptomatic, the remaining 50 per cent being asymptomatic. Surf dressing sheds were hotbeds of infection. This was the experience of Dr J. Witton Flynn of Sydney, who had noted a rapid increase in the incidence of the condition in recent years. Dr A. G. Butler of Canberra found that the incidence was 90 per cent among the cadets at the Royal Military College, Duntroon. Dr S. Watson Smith of Bournemouth, England, said that tinea infections were very common in boys' boarding schools in Great Britain.

## CALCIUM

Dr F. S. Hansman of Sydney, in the section of pathology and bacteriology, drew attention to the recent work of McLean and Hastings on the form in which calcium existed in the serum. These workers concluded that as calcium protenate it was ionized as a weak salt. Dr Hansman's own experiments indicated that, for Australian children, an ample maximum daily intake of calcium was 0.5 Gm. It was difficult to estimate an analogous figure for phosphorus. Analyses by Dodswell of Australian grain and vegetables showed the phosphate content to be low.

## BONE TUMORS

Speaking on tumors of bone, Prof A. M. Drennan of Edinburgh referred to the difficulty of identifying the primary site of the secondary growths in bone. He showed that the giant cell tumor was falsely regarded as benign.

Prof Peter MacCallum of Melbourne said that a better understanding of the behavior of bony tissues would be achieved if the calcium content was regarded as incidental and the reactions were regarded as those of specialized connective tissue with fluctuations according to circumstances in the amount and condition of the intercellular matrix, its vascularity and its cellular content. The quality of bony rigidity was dependent on the nature of the matrix as well as on that of the calcium impregnation. The analyses of the effect of internal secretions, vitamins and variations in the supply of essential salts in the different stages of bone development were opening up the way to a better understanding of bone pathology.

Dr R. A. Willis of Melbourne asked whether there was any essential difference between an osteoblast and a fibroblast. Differing external conditions might be the determining factor. The occurrence of bony metaplasia of connective tissue on the one hand, and the ready development of abundant connective tissues in various rarefying diseases of bone on the other hand, at least suggested that in bone disease reversible osteoblast-fibroblast transformations might be of general importance.

## VIRUS DISEASE

Dr F. M. Burnet of Melbourne, who is an international authority on virus disease, stressed the ecologic view of infectious disease. The survival of the contending species (vertebrate host and infecting micro-organism) was essential. In nearly all long established endemic virus diseases, the inapparent but immunizing infections played a most important part in the epidemiology. As examples of current interest might be mentioned poliomyelitis in American or Australian cities, and yellow fever in West African natives. In the veterinary field, louping ill in sheep in Scotland and pseudorabies infection among swine in the Middle Western states of America (Shope) might be instanced. In all these cases, typical disease was far less frequent than inapparent infection. In the realm of bacterial diseases, diphtheria was also an obvious example of this principle. In a nonimmune population, most clinical manifestations occurred during early adult life (e. g., typhoid, lobar pneumonia, typhus fever, smallpox and psittacosis). This phenomenon was interpreted as being due to the large proportion of inapparent infections during childhood. In a stable population, where the nonimmune entered only by birth, the age incidence peak was in childhood, even though the inapparent infections were still widespread. The proportion of apparent to inapparent cases differed widely with different diseases. Cerebrospinal meningitis and poliomyelitis showed an enormous preponderance of inapparent infections, while measles and chickenpox provided the other extreme.

Prof H. K. Ward of Sydney drew attention to Zinsser's observation that European typhus occurred in Boston and New York only among emigrants from the typhus countries of Europe. He deduced from this that *Rickettsia* persisted in the cells and that in a certain proportion of cases a relapse resulted from a breakdown in immunity. It was more likely to be correct that the virus persisted in the cells continually stimulating antibody production than to suppose that the virus disappeared soon after infection and that subsequent generations of cells continued to produce antibodies without any specific stimulation.

Dr E. V. Keogh of Melbourne described Dr Burnet's recently developed method of titrating antiviral serums against virus suspensions, using the chorion-allantoic membrane of the developing chick embryo. This method was 500 times more accurate than the living animal method, as it enabled the lesions and their modifications to be studied, the lesions counted, and the time of appearance noted. It is possible that this method will open an experimental avenue which will profoundly influence all future work in this field.



### The Second International Pacific Health Conference

Held at the School of Public Health and Tropical Medicine, Sydney, September 3 to 6, the second International Pacific Health Conference was attended by official delegates from the League of Nations, Great Britain, China, Japan, Netherlands, New Zealand, Australia, Papua, Fiji, Straits Settlements, Federated Malay States, New Guinea and Solomon Islands. Regrets that no representative could attend were received from the governments of France, the United States, Canada and Portugal.

The first conference was held in Melbourne in 1926, when quarantine procedure had been standardized and the organization of the Austral Pacific Zone instituted. The definition of this zone is "south of the equator and between longitude 140 degrees east to 140 degrees west." No cases of plague, cholera, yellow fever, epidemic typhus and epidemic smallpox had occurred in the zone in the intervening period. Interest had been centered, however, in epidemic influenza, dysentery, measles and poliomyelitis, as well as in endemic filariasis, yaws, leprosy, malaria and tuberculosis. Appreciation was expressed of the assistance rendered by the Rockefeller Foundation in several surveys and investigations undertaken in the Western Pacific island groups.

#### LEPROSY

At Sungei Buloh in Malaya is the largest leper hospital in the British empire. Dr G A Ryrrie stated that the standard treatment there was intradermal and intramuscular injection of hydnocarpus esters. Of the experimental intravenous injections of twenty-five different aniline dyes, fluorescein had been found the most useful. This was a compound of phthalic acid and resorcin. Extensive experiments with resorcin had proved useless. Recent experiments had shown that cotarnine phthalate had a definite ameliorative effect on leprosy. It was difficult to assess the value of any specific treatment. There was a racial factor which assisted one treatment but hindered another in the same way that different races tend to preponderate in different manifestations (in Indians 36 per cent were neural and improved rapidly, whereas 52 per cent of Fijians were neural and were relatively resistant). At Makogai, Fiji, Dr A H B Pearce had found that attention to general dietary and hygienic treatment was probably of greater value than specific medication. He had mainly used iodized oil. In the Northern Territory of Australia, Dr C E Cook reported that leprosy in its active infective form predominated in the coastal zone. Dry weather improved the condition even without specific treatment. At Nauru, every native islander was examined at eight weekly intervals. Treatment followed general lines of intramuscular injections of the hydnocarpus methyl esters and intradermal injections of the methyl esters with iodine 1 per cent and benzocaine 0.5 per cent added (the latter as a local anesthetic). Following the practice at Culion, 'P I Dye' treatment was now being tried, Bonney's blue being used according to Ryles's method.

#### MALARIA

A survey in the Austral Pacific Zone showed that the anopheles, in its spread from an Indo-Malayan habitat, had not yet been able to cross the sea gap between the islands to the south and east. To New Caledonia, Fiji, Samoa and the other groups to the east, malaria was therefore of interest from the point of view of the possibility of the introduction of anopheles and infection. In the New Hebrides, in New Guinea, in Papua, in the Solomon Islands and across northern Australia, malaria was definitely a major part of the disease picture. In Rabaul the relative frequency of the different types in hospital patients had been recorded as subtertian 68 per cent, benign 21 per cent, quartan 4 per cent and mixed 7 per cent. Atabrine had been found very useful, but in an attack of any severity or with gastric symptoms quinine was considered necessary during the

first twenty-four hours. A fall in the polymorphonuclear cell count was the constant and useful prognostic sign. In Netherlands New Guinea Dr de Rook found that the malaria limit was 1,100 meters altitude.

#### YAWS

In Papua (Dr W M Strong) bismuth salicylate suspended in olive oil (1 in 8) was used in treatment in doses of 2 cc. This was almost as efficient as neoarsphenamine, was cheaper, and was less dangerous when administered by partially trained personnel. In Samoa the Rockefeller foundation assisted in the successful work of the yaws campaign.

#### TUBERCULOSIS

General experience, said Dr W M Strong, indicated that while tuberculosis remains a problem, evidence was now available to indicate that native races were capable of withstanding the invasion of tuberculosis. The most interesting reports presented to the conference dealt with the results of tuberculin skin tests. As these came from widely separated centers, their value was significant. At the Hanuabada village, adjoining Port Moresby, in 1,841 Mantoux tests 39 per cent gave negative results, 35 per cent one plus positive, 20 per cent two plus positive and 5 per cent three plus positive. There was a slightly higher percentage of positives among the males, owing to closer contact with the white population. In the Solomon Islands of 1,553 natives tested, 86.88 per cent of the adults and 57.1 per cent of children between 6 and 16 years of age gave positive results. In the Maori population practically all adults reacted to the Mantoux test, except in one village, which was almost completely isolated from Europeans, and but little positive reaction was found. These surveys had been carried out by Dr F W Clements, Dr S M Lambert and Dr M H Watt respectively.

#### DIETS IN RELATION TO CLIMATE, RACE AND WORK

Prof Harvey Sutton discussed the Australian experience with regard to diet and the dietetic deficiency diseases. Medical men were constantly encountering the dangers of a monotonous limited diet, often composed of so called purified foods. Those who indulged in such diets were generally unmarried persons, women with the craze for fashionable methods of 'slimming' and people who lived like hermits in remote groups. Even whole populations in outback areas came under this heading. The deficiencies in those limited diets caused many diseases. In Australia rickets is the basis of a marked proportion of dull children in schools. The value of diet in the creation and maintenance of mental health will in the future be realized as essential to human progress and of major importance in public health and preventive medicine. In spite of Australia's position as a great food-producing country, Australians still derived part of their real dietary from overseas. Sydney grew little of its food even within a radius of 50 miles. Four fifths of its milk supplies came from the country over distances up to 200 miles. Meat might be in cold storage for months before it was sold and the age of eggs when sold was still, he believed, a mystery. This meant that everything, even the fresh elements, tended to be depreciated and spoiled. He emphasized these facts to demonstrate the increasingly insidious manner in which food was depreciated.

#### DIET IN RELATION TO TROPICAL ULCERS

Dr F W Clements of Sydney said that the cause of tropical ulcers was now recognized as spirochetes and fusiform bacilli. During a survey last year of New Guinea natives it was found that 90 per cent of the adults harbored these organisms in their mouths. Tropical ulcers were most common in villages where the natives lived almost entirely on native sago. There it had ranged up to 15 per cent of the population. The percentage fell when the diet of the natives was augmented by fish or taro. There was a complete absence of the disease in fishing villages,

where the native diet was 60 or 70 per cent protein. The percentage of cases was low in villages where taro was eaten. The percentage grew as the distance from the coast increased. There was no doubt that the introduction of fish and taro (or proteins) had a marked effect in reducing the number of cases of tropical ulcers. There was also the relationship of deficiency of vitamins A and B<sub>2</sub>.

#### CHINESE DIETARIES

Dr. Wu Lien-Teh (China) said that in northern China wheat was the staple food, while millet, corn, rice and sorghum were of secondary importance. In the south rice was the prevailing cereal. The amount of animal food eaten by the Chinese people was only one-fifth that eaten by Europeans. Milk and cheese, which made up 10 per cent of the European diet, was absent from the Chinese diet. Although the Chinese ate more legumes than Europeans, the quantity of fresh vegetables and fruit was smaller in the Chinese dietary. He agreed that the lack of the proper vitamins might contribute largely to the cause of trachoma, an eye condition that was prevalent among the poorer classes of China. Putting aside the question of physical characteristics, it was possible that the comparatively inferior development in height and weight of the average Chinese child might be due to deficiency of the right kind of protein, as well as other dietary factors. However, it should not be forgotten that while Chinese were more subject to some diseases, they were less subject to heart and kidney troubles and to cancer.

#### ITALY

(From Our Regular Correspondent)

Oct. 15, 1935

#### Sanitary Condition of the Colonial Troops

The general management of the Sanita militare has published a report on the sanitary condition of the Italian colonial troops during the year 1934. Among the officers there were 107 cases of morbidity in Cyrenaica, forty-seven in Italian Somaliland and ninety-four in Eritrea, with an average daily number of patients in the hospitals of 2 per cent in Italian Somaliland and 3 per cent in the other colonies. Among the noncommissioned officers and enlisted men of the metropolitan troops the morbidity, per thousand effectives, was 320 in Tripolitania, with an average daily number of fifteen patients, in Cyrenaica, with fourteen patients a day, 131 in Somaliland, with four patients a day, 226 in Eritrea, with twelve patients a day. Among the native troops the morbidity per thousand was 213 in Tripolitania, with a daily average of eight patients, 308 in Cyrenaica, with twelve patients a day, 658 in Somaliland, with twenty-two patients a day, 133 in Eritrea, with four patients a day.

The morbidity among the officers was nil in Cyrenaica and Eritrea, 594 per thousand in Tripolitania and 943 in Somaliland. Among the noncommissioned officers and enlisted men of the metropolitan troops there were no deaths in Somaliland and Eritrea, but there were 275 deaths per thousand in Tripolitania and 097 in Cyrenaica. Among the native soldiers the mortality was 303 in Tripolitania, 488 in Cyrenaica, 2485 in Somaliland and 648 in Eritrea. Among the most common diseases were influenza, varicella, measles, parotitis and venereal disease. An outbreak of twenty cases of smallpox with fourteen deaths occurred in Somaliland, it should be noted that during 1933 there were 200 further cases of smallpox diagnosed among the civilian population in spite of the isolations, the vaccinations and revaccinations, which were extended also to the families of the persons attacked, it proved impossible to prevent the spread of the infection among the native troops.

Amebic and bacillary dysentery prevailed in Tripolitania in July and August, in Cyrenaica in June and July and in Somaliland in May. Malaria predominated in Somaliland and tuberculosis in Cyrenaica and Tripolitania. There were few cases of ancylostomiasis, echinococcosis and bilharziasis.

#### The Academy of Sciences

The Accademia di scienze medico chirurgiche met at Naples under the chairmanship of Professor Pascale, senator.

Bruzzi spoke on "The Relations Between the Middle Ear and the Focal Infections of Billings." The speaker concluded that even simple otitis may give rise to the most varied remote complications, with a relatively high degree of receptivity in certain organs, namely, renal, pulmonary, osteomyelitic and gastro-intestinal localizations, including generalized septicemia.

De Amicis reported, with presentation of the patient, a case of perigenital ulcerous granuloma, which is the first case of the kind recorded in Italy and the seventh in Europe. The disease is found almost exclusively in South America, New Guinea, the Indies, and central Africa. The diagnosis is difficult, particularly the differentiation from a syphilitic lesion and ulcer due to Ducrey's bacillus. With photomicrographs the speaker demonstrated that in his case the diagnosis was confirmed microscopically and by the bacterioscopic examination, which revealed the presence of the characteristic Donovan bodies. Also the treatment confirmed the diagnosis, the disorder having cleared up promptly following the use of an antimony preparation. The patient had never been outside of Italy and had never had contacts with persons presumably affected with the disease.

#### Protection of Hospitals from Air Attacks

G. Sollazzo has called attention to the problem of antiaerial protection of hospitals. An air attack presents three types of danger: the hurling of explosive bombs, incendiary shells and gas bombs. Antiaerial protection should prevent damage to the health of the patients and of the personnel and should protect the buildings and hospital equipment. The retreats that the patients and the attending personnel must occupy ordinarily in case of an alarm will be located in cellars or in semisubterranean areas. They will probably be equipped with apparatus for filtration of the air, but it should be possible to make them hermetically sealed, and hence they should be provided with machines for the regeneration of the air. They will have electric light and first-aid protection, including antgas equipment and facilities for extinguishing fires. Every hospital department should have its own retreat. To protect the nontransportable patients, it will be necessary to organize the defense in the wards by applying special blinds to the windows and hermetically sealing the door openings. A gas mask should be supplied to each patient. During a chemical air attack, a hospital should provide a first aid station in a retreat equipped with antgas apparatus, for the protection of the civilian population. The roofs of hospital buildings should be made noncombustible by reducing to a minimum the inflammable material and impregnating the structures with fireproof substances.

#### Prof. Filippo Rho

The death of Prof. Filippo Rho, member of the naval medical corps, with the rank of lieutenant general, an eminent authority on tropical medicine, has been announced. He founded the journal *Annali di medicina navale e coloniale*, of which he was also the manager. He published a treatise on the principal diseases of warm countries, and after acquiring the *venia legendi* he became instructor in colonial pathology at the University of Naples and served at the same time as director of the Ospedale militare marittimo. During the Libyan and the European wars he organized the sanitary, hygienic and prophylactic work for the naval medical corps. In addition to the treatise mentioned he published about 150 scientific articles and was a collaborator for numerous other treatises and encyclopedias. He was vice president of the Società italiana di medicina e igiene coloniale and a member of numerous scientific academies, Italian and foreign.

## Marriages

HENRY HANSFORD WARD Sumatra, Fla, to Miss Edith Rebecca Nall of Miami in Tallahassee Oct 5 1935

WILLIAM J WOOLSEY, Waco, Texas to Miss Helen Roberta Henry of New York in Chester, S C, recently

JOSEPH I WARING to Mrs Ferdinanda Legare Backer, both of Charleston, S C, Oct 14, 1935

MYRTLE FLORENCE SWEIMLER, Watseka, Ill to Mr Louis V Jackson of Champaign recently

WILLIAM DURWOOD SUGGS to Miss Grace Lorraine both of Richmond, Va, Nov 2, 1935

JOHN F PICK to Mme Marguerite Grassino Farre, both of Chicago, in December, 1935

KARL VON HAGEN to Miss Vivian Tobin both of Los Angeles, Sept 14 1935

JOHN C URBATIS to Miss Ethel Chapman both of Warren, Pa recently

NATHAN H WENIGER to Miss Celia Epstein both of Brooklyn, Dec 7 1935

## Deaths

Charles Loomis Dana, Woodstock, Vt College of Physicians and Surgeons, Medical Department of Columbia College New York, 1877, professor of clinical medicine (neurology) emeritus, Cornell University Medical College member of the Medical Society of the State of New York member and past president of the American Neurological Association, past president of the New York Academy of Medicine author of the 'Textbook of Nervous Diseases and Psychiatry' in 1892 aged 83, died Dec 12, 1935 at Harmon-on-Hudson, N Y of cerebral hemorrhage

Siegfried Elias Katz @ New York, Harvard University Medical School, Boston, 1924, fellow of the American Psychiatric Association, member of the Association for Research in Nervous and Mental Disease and the American Orthopsychiatric Association, instructor of psychiatry at the Columbia University College of Physicians and Surgeons on the staff of the New York Psychiatric Institute Hospital aged 45 died suddenly, Dec 14, 1935, in the Presbyterian Hospital of cerebral hemorrhage.

William Norwood Souter @ Portsmouth, N H, University of Maryland School of Medicine Baltimore 1886 member of the New England Ophthalmological Society formerly instructor in ophthalmology Harvard University Medical School Boston, served in the reserve corps during the World War at one time on the staff of the Massachusetts Eye and Ear Infirmary Boston, aged 74, died Nov 24, 1935 at his home in Newcastle, of carcinoma of the stomach, liver and peritoneum

Harry Bernard Podlasky @ Milwaukee Jefferson Medical College of Philadelphia, 1909, associate clinical professor of roentgenology, Marquette University School of Medicine, member of the American Roentgen Ray Society and the Radiological Society of North America, served during the World War director of the x-ray department of the Mount Sinai Hospital aged 51, died, Nov 3 1935, of coronary sclerosis and embolism

Mabel Seagrave, Seattle Johns Hopkins University School of Medicine Baltimore 1911, member of the Washington State Medical Association, fellow of the American College of Surgeons served during the World War member of the attending staffs of the Providence Swedish Columbus Seattle General and King County hospitals aged 53, died suddenly Nov 10 1935 of cerebral hemorrhage and arteriosclerosis

Roy Moon, Attica, Iowa State University of Iowa College of Medicine Iowa City 1903, member of the Iowa State Medical Society past president of the Marion County Medical Society, served during the World War formerly assistant superintendent of the Clarinda (Ia) State Hospital and the state hospital at Glenwood, aged 63 died Nov 24, 1935 of heart disease

Joseph Seymour Almas @ Havre Mont University of Toronto Faculty of Medicine, Toronto Ont Canada 1891 past president of the Hill County Medical Society on the staffs of the Kennedy Deaconess Hospital and the Sacred Heart Hospital aged 71 died Nov 6 1935 in the University Hospital Minneapolis, of intestinal obstruction

William Roffin Goley, Shallotte N C, University College of Medicine, Richmond 1901 member of the Medical Society of the State of North Carolina, mayor past president of the Brunswick County Medical Society, on the staff of the Brunswick County Hospital Southport, aged 58, died, Nov 12, 1935, of angina pectoris and edema of the glottis

Cornelius Vincent Kilbane @ New York University of Cincinnati College of Medicine 1920, formerly assistant professor of radiology, Cornell University Medical College, director of radiology, New York Foundling Hospital, French Hospital and the Misericordia Hospital aged 42, died, Dec 17, 1935, of bronchopneumonia

Edgar Stuart Estes @ St Augustine, Fla University of Virginia Department of Medicine, Charlottesville 1905 past president of St Johns County Medical Society formerly city health officer served during the World War for many years on the staff of the Flagler Hospital, aged 56, died, Dec 6, 1935 of heart disease

Robert Burns Anderson, Brooklyn Cornell University Medical College, New York, 1899, member of the Associated Anesthetists of the United States and Canada, fellow of the American College of Surgeons, on the staffs of St Mary's Hospital and St John's Hospital, aged 64, died, Dec 5, 1935, of coronary thrombosis

Russell Erastus Adkins, Indianapolis, University of Pennsylvania Department of Medicine, Philadelphia 1906 for many years a medical missionary in South China on the staff of the Veterans Administration Facility, aged 62, died, Dec 15, 1935, in the Methodist Hospital, of cerebral hemorrhage and arteriosclerosis

James Hall Bell, Washington, D C Jefferson Medical College of Philadelphia, 1884, fellow of the American College of Surgeons, in 1904 second Vice President of the American Medical Association, formerly on the staff of the Santa Rosa Hospital, San Antonio, aged 78 died, Nov 10, 1935, of pulmonary edema

Ferdinand Austin Kittinger, Lockport, N Y College of Physicians and Surgeons Medical Department of Columbia College, New York, 1893, member of the Medical Society of the State of New York county coroner, aged 64 died, Nov 4, 1935, of coronary embolism and cerebral hemorrhage.

Thomas Albert Kearns, Flora Ind, Medical College of Indiana, Indianapolis 1904, member of the Indiana State Medical Association, past president and secretary-treasurer of Carroll County Medical Society, aged 57 was found dead in his office, Dec 2, 1935, of poison, self administered.

Charles D Mills, Marysville, Ohio, Medical College of Ohio, Cincinnati 1880, member of the Ohio State Medical Association, past president of the county board of health, medical director of the Ohio Reformatory for Women, aged 78 died, Dec 2, 1935, of heart disease

Herbert D Sykes @ Milwaukee, Wisconsin College of Physicians and Surgeons, Milwaukee, 1901 at one time professor of pharmacology at his alma mater, on the staff of St Luke's Hospital, aged 74, died, Nov 13 1935, of furuncle of the right nostril and septicemia

Harry C Chappelier, Hughesville Md University of Maryland School of Medicine, Baltimore 1897 member of the Medical and Chirurgial Faculty of Maryland aged 62, died, Dec 8 1935 in the District of Columbia of bronchopneumonia and empyema of the gallbladder

Adam Lawrence Schneider @ Fort Wayne, Ind, Fort Wayne College of Medicine, 1898, for many years president and vice president of the board of health on the staff of the Lutheran Hospital aged 63, was killed Nov 6, 1935, when struck by an automobile.

Milton Franklin Stuessy @ Richlandville Wis Rush Medical College Chicago, 1930, bank president, aged 31 died Nov 29 1935 in the Evangelical Deaconess Hospital Monroe, of injuries received when struck by an automobile, while fixing a tire on his automobile.

William Winston Burbank, Long Beach, Calif, Stanford University School of Medicine 1931 member of the California Medical Association aged 29, died, Nov 29, 1935, in the Artesia (Calif) Hospital, of a skull fracture received in an automobile accident

Theodore G Brehm, Racine Wis, Northwestern University Medical School Chicago, 1891, member of the State Medical Society of Wisconsin formerly member of the board of health aged 78 died Nov 4 1935, of chronic myocarditis and nephritis

**Walter Valentine Spencer**, Logan, Texas, University of Oregon Medical School, Portland, 1904, served during the World War, on the staff of the Veterans Administration Facility, aged 60, died, Nov. 4, 1935, at Portland, Ore., of coronary thrombosis.

**Maurice Allen Buck**, Billerica, Mass., Harvard University Medical School, Boston, 1898, member of the Massachusetts Medical Society, formerly member of the state legislature and school committee, aged 61, died, Nov. 19, 1935, of coronary occlusion.

**William Fisher Haines** ♂ Seaford, Del., Jefferson Medical College of Philadelphia, 1888, past president of the Sussex County Medical Society, formerly member of the state board of health, aged 73, died, Nov. 29, 1935, of coronary occlusion.

**Guy Augustus Knight**, Kaylor, Pa., Jefferson Medical College of Philadelphia, 1905, member of the Medical Society of the State of Pennsylvania, aged 54, died, Nov. 4, 1935, in Bradenton, Fla., of myocarditis and nephritis.

**Guy Leslie Austin**, Pavo, Ga., University of the South Medical Department, Sevanee, Tenn., 1906, member of the Medical Association of Georgia, served during the World War, aged 56, died, Dec. 11, 1935, of heart disease.

**Frank Waldron Morse** ♂ Canton, Maine, Medical School of Maine, Portland, 1896, for twenty-six years member of the school board, county medical examiner, aged 63, died suddenly Nov. 10, 1935, of coronary thrombosis.

**John Floyd Koogler**, Kansas City, Mo., Medico-Chirurgical College of Philadelphia, 1910, member of the Missouri State Medical Association, aged 63, died, Nov. 11, 1935, in the Menorah Hospital, of coronary occlusion.

**Theodore N. Kiesenwetter**, Troy, N. Y., McGill University Faculty of Medicine, Montreal, Que., Canada, 1932, on the staff of the Samaritan Hospital, aged 30, died, Dec. 16, 1935, of poison, self-administered.

**Eli Franklin Irwin**, Weston Ont., Canada, M.B. University of Toronto Faculty of Medicine, 1890, M.D., Victoria University Medical Department, Coburg, 1890, died, Nov. 3, 1935, of heart disease.

**George E. Page**, Elk River, Minn., University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1903, formerly county coroner, aged 60, died, Nov. 2, 1935, of coronary sclerosis.

**C. Arthur Emmons**, Perth Amboy, N. J., Hahnemann Medical College and Hospital, Chicago, 1894, aged 64, died, Nov. 30, 1935, of a skull fracture received when he was struck by an automobile.

**Andrew J. Clingan**, De Queen, Ark., University of Arkansas School of Medicine, Little Rock, 1902, member of the Arkansas Medical Society, aged 67, died, Nov. 29, 1935, of hepatic cirrhosis.

**Isaac N. McLean**, Burnsville, N. C., Tennessee Medical College, Knoxville, 1899, member of the Medical Society of the State of North Carolina, died, Nov. 4, 1935, of cerebral hemorrhage.

**John Drewery Mangham**, Alamo, Ga., University of Georgia Medical Department, Augusta, 1932, aged 32, was found dead, Nov. 30, 1935, as the result of an overdose of an anesthetic.

**Thomas S. Kirkpatrick**, Fort Mill, S. C., University of Maryland School of Medicine, Baltimore, 1884, formerly mayor and bank president, aged 75, died, Nov. 10, 1935, of heart disease.

**Jules Lafleur**, Montreal, Que., Canada, School of Medicine and Surgery of Montreal, 1902, served during the World War, member of the board of health, aged 56, died, Oct. 23, 1935.

**H. Fuller Pratt**, Topeka, Kan., Medical College of Ohio, Cincinnati, 1884, formerly president of the bank in Rossville, aged 73, died, Nov. 3, 1935, probably of cerebral hemorrhage.

**Milton Maceo Cloud**, Los Angeles, Meharry Medical College, Nashville, Tenn., 1917, aged 41, died, Oct. 4, 1935, in a hospital at Pomona, Calif., of a self-inflicted wound of the throat.

**George Plato Bingham**, Bluff City, Tenn., Hospital Medical College, Atlanta, Ga., 1911, aged 57, died, Oct. 11, 1935, in the George Ben Johnston Memorial Hospital, Abingdon, Va.

**Thomas Fister Heebner**, Philadelphia, University of Pennsylvania Department of Medicine, Philadelphia, 1883, aged 75, died, Nov. 26, 1935, of chronic nephritis and uremia.

**William Burdette Chapin**, Pittsboro, N. C., University of North Carolina School of Medicine, Chapel Hill, 1909, aged 52, died, Nov. 6, 1935, of carcinoma of the liver.

**Howard M. Montgomery**, Port Clinton, Ohio, Barnes Medical College, St. Louis, 1895, aged 65, died, Nov. 15, 1935, in the Robinwood Hospital, Toledo, of pneumonia.

**Frank Carroll** ♂ Fort Collins, Colo., State University of Iowa College of Medicine, Iowa City, 1894, aged 64, died, Dec. 5, 1935, of carcinoma of the omentum.

**Emory Arnold Morris**, Birmingham, Ala., University of Nashville (Tenn.) Medical Department, 1902, aged 56, died, Dec. 7, 1935, of acute coronary occlusion.

**Cyril Preston Vores**, Unionville, Mo. (licensed in Missouri in 1907), aged 62, died, Dec. 2, 1935, in the Research Hospital, Kansas City, of carcinoma of the stomach.

**Walter Denis Hunt**, Douglas, Ariz., Eclectic Medical Institute, Cincinnati, 1896, served during the World War, aged 66, died, Nov. 1, 1935, of angina pectoris.

**C. Frank Maguire**, Upper Marlboro, Md., University of Maryland School of Medicine, Baltimore, 1883, aged 74, died, Nov. 24, 1935, of intestinal obstruction.

**John Sumter Tanner**, Warren, Ohio, Ohio State University College of Medicine, Columbus, 1923, aged 52, died, Oct. 22, 1935, of cardiorenal vascular disease.

**William A. Angell**, Minneapolis, University of Minnesota Medical School, Minneapolis, 1895, aged 65, died, Dec. 11, 1935, of sarcoma of the perineum.

**Philip Elington Milton**, Tampa, Fla., Georgia College of Eclectic Medicine and Surgery, Atlanta, 1901, aged 61, died, Nov. 25, 1935, in a local hospital.

**Will Carleton North**, Rockford, Ill., State University of Iowa College of Medicine, Iowa City, 1928, aged 38, died, Oct. 21, 1935, of angina pectoris.

**Humphrey H. Hall**, Winston-Salem, N. C., Leonard Medical School, Raleigh, 1889, aged 69, died, Nov. 9, 1935, as the result of an automobile accident.

**Matilda Eaton** ♂ Cambridge, Ill., Bennett College of Eclectic Medicine and Surgery, Chicago, 1896, aged 72, died, Nov. 27, 1935, of mitral insufficiency.

**Fay E. Gaither**, Nemaha, Neb., John A. Creighton Medical College, Omaha, 1906, aged 53, died, Nov. 11, 1935, of chronic myocarditis.

**Joseph E. Peebles**, Pleasant Unity, Pa., Cincinnati College of Medicine and Surgery, 1885, aged 77, died, Oct. 19, 1935, of fracture of the hip.

**Frank T. Anderson**, Philadelphia, Jefferson Medical College of Philadelphia, 1882, aged 78, died, Nov. 25, 1935, of heart disease.

**J. O. Kelley**, Avera, Ga., Atlanta School of Medicine, 1908, member of the Medical Association of Georgia, aged 54, died, Oct. 30, 1935.

**Grace Mae Harcourt Hoag**, Valley Falls, N. Y., Baltimore University School of Medicine, 1901, aged 59, died, Oct. 28, 1935.

**Thomas McKendrie Young**, Chillicothe, Texas (licensed in Texas in 1908), aged 77, died, Oct. 31, 1935, of cerebral hemorrhage.

**James McKnight Hunter**, Millers Creek, N. C. (licensed in North Carolina in 1902), aged 70, died, Nov. 26, 1935, of carcinoma.

**Philip Edward Ayer** ♂ Los Angeles, Jefferson Medical College of Philadelphia, 1923, aged 37, died, Oct. 11, 1935, in Compton.

**Charles Edward Bennett**, Wauseon, Ohio, Detroit Medical College, 1876, formerly county coroner, aged 80, died, Oct. 28, 1935.

**Charles H. Corwin**, Lebanon, Ohio, Medical College of Ohio, Cincinnati, 1901, aged 58, died, Nov. 8, 1935, of heart disease.

**Ellis P. Maulsby**, Casey, Iowa, College of Physicians and Surgeons, Keokuk, 1877, aged 83, died, Nov. 21, 1935, of heart disease.

**Laburn Hall**, Turner, Ark., Louisville (Ky.) Medical College, 1882, aged 79, died, Nov. 27, 1935, of cerebral hemorrhage.

**F. E. P. Daniel**, Sarah, Miss., Memphis (Tenn.) Hospital Medical College, 1894, aged 90, died, Oct. 29, 1935, of senility.

**Nicholas Duvally**, Boston, Tufts College Medical School, Boston, 1916, aged 55, died, Nov. 20, 1935, of coronary sclerosis.

**Charles Scott Reid**, Detroit, Fort Wayne (Ind.) College of Medicine, 1890, aged 76, died, Nov. 1, 1935.

**Albert M. Edgell**, Cairo, W. Va. (licensed in West Virginia in 1881), aged 79, died, Dec. 1, 1935.

# Bureau of Investigation

## MISBRANDED "PATENT MEDICINES"

### Abstracts of Notices of Judgment Issued by the Food and Drug Administration of the United States Department of Agriculture

[EDITORIAL NOTE The abstracts that follow are given in the briefest possible form (1) the name of the product, (2) the name of the manufacturer, shipper or consigner, (3) the composition, (4) the type of nostrum, (5) the reason for the charge of misbranding and (6) the date of issuance of the Notice of Judgment—which may be considerably later than the date of the seizure of the product]

**Raz Mah**—Templeton & Inc. Detroit Composition In each capsule aspirin (about 0.3 gram) with caffeine and charcoal Supplementary white pills Saltpeter plant material including a laxative, with bearberry red pepper and juniper oil Blue pills Vegetable drugs including aloin red pepper and strychnine. For asthma hay fever bronchitis etc. Fraudulent therapeutic claims—[N J 22975 April 1935]

**Savel Cream**—Savol Chemical Co. Mercer Pa Composition Essentially barium sulfate and zinc oxide in petrolatum perfumed For bites of animals carbuncles erympelas piles etc. Fraudulent therapeutic claims—[N J 22978 April 1935]

**Liberties**—Research Products Corporation Chicago Composition Essentially chloramine-T Rochelle salt baking soda and starch Not a germicide as represented. Fraudulent therapeutic claims—[N J 22981 April 1935]

**D D Capsules**—Duray Distributing Co. Seattle. Composition Essentially salol with a protein-containing substance and starch. For high blood pressure. Fraudulent therapeutic claims—[N J 22983 April 1935]

**Elroy's Six Point Remedy**—Elroy's Six Point Remedy Los Angeles Composition Essentially cottonseed oil camphor turpentine oil small amounts of other volatile oils and 15 grams per bottle of quinine sulfate. For arthritis sinus infections tonsillitis varicose veins pleurisy pneumonia etc. Fraudulent therapeutic claims—[N J 22985 April 1935]

**Berash**—J W Wilkang Co Inc. Hoboken Composition Essentially epsom salt plant extractive alcohol (14 per cent by volume) and small amounts of benzoic and acetic acids with sugar and water. For rheumatism piles stomach skin kidney and liver disorders etc. Fraudulent therapeutic claims—[N J 22986 April 1935]

**Throat Ease**—The Tonsilo Co. Wheeling W Va Composition Essentially potassium chlorate iron chloride quinine hydrochloride glycerine alcohol and water. For sore throat and tonsillitis. Fraudulent therapeutic claims—[N J 22988 April 1935]

**Ludens' Antiseptic Cough Drops**—Ludens' Inc. Chicago Composition Sugar lozenges containing a small amount of local anesthetic such as benzocaine and volatile oils including menthol thymol and eucalyptol. Not antiseptic as represented. Fraudulent therapeutic claims—[N J 22989 April 1935]

**Gray's Syrup**—D Watson & Co. New York and Montreal Composition Plant drugs including wild cherry with small amounts of sodium potassium iron calcium and magnesium salts, alcohol (16.3 per cent by volume) and water. For coughs hoarseness etc. Fraudulent therapeutic claims—[N J 22997 April 1935]

**Williams Camphorated Mustard Cream**—Mothersill Remedy Co Ltd New York and Montreal Composition A yellowish ointment containing chiefly mustard oil wintergreen menthol and camphor. For rheumatism neuritis etc. Fraudulent therapeutic claims—[N J 22997 April 1935]

**Norma Effervescent Preparation**—Norma Packing Co. New York Composition Essentially baking soda tartaric acid and sugar. For acidity and other stomach disorders. Fraudulent therapeutic claims—[N J 22999 April 1935]

**Sweet's Certified Blood Tea**—Sweet Mfg Co Inc. Pittsburgh Composition Essentially senna leaves couch grass sassafras bark elder flowers juniper berries anise seed fennel seed and bearberry leaves. For indigestion influenza anemia rheumatism etc. Fraudulent therapeutic claims—[N J 23000 April 1935]

**Sweet's Bear Brand Salve**—Sweet Mfg Co Inc. Pittsburgh Composition Essentially tar oil in petrolatum. For sores cuts carbuncles eczema and skin diseases generally. Fraudulent therapeutic claims—[N J 23000 April 1935]

**Lax Aid**—Healthaids Inc. New York. Composition Essentially ground plantago seed (presumably the species known as psyllium seed). For removing the causes of constipation rheumatism diseased tonsils heart trouble etc. Fraudulent therapeutic claims—[N J 23001 April 1935]

**Chamberlain's Cough Remedy**—Chamberlain Medicine Co. Des Moines, Iowa Composition Essentially ammonium chloride (2 grains per fluid ounce) extracts of plant drugs sodium benzoate (4 grains per fluid ounce), sugar and water. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Sal Fruitol**—Sal Fruitol Co. Baltimore Composition Essentially epsom salt, tartaric acid baking soda and caffeine (1 per cent), flavored with lemon oil. For stomach liver and kidney disorders rheumatism etc. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Gorden's Three Sevens (777)**—Porjas Chemical Co. Wilmington N C Composition Essentially epsom salt, iron chloride quinine and water. For malaria chills fevers etc. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Pe Ru Na Tablets**—Pe Ru Na Co. Columbus, Ohio Composition Essentially plant drugs and compounds of iron, calcium and phosphorus, including a carbonate. For coughs chronic catarrh, etc. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Duffy's Anti Biliary Pills**—F S Duffy Medicine Co. New Bern N C Composition Essentially plant drug extracts including rhubarb and aloes, magnesium oxide and small amounts of calcium and sodium compounds. For biliousness rheumatism kidney diseases etc. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Breeden's Rheumatic Compound**—Breeden Drug Co. Inc. Memphis Composition Essentially potassium iodide and plant drug extracts including colchicum with alcohol and water. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Willard's Tablets**—Willard Tablet Co. Chicago Composition 0.6 gram each of baking soda, bismuth subnitrate and magnesium oxide per tablet. For stomach disorders including ulcers. Fraudulent therapeutic claims—[N J 23007 April 1935]

**K W Syrup of Tar and Hereheund Compound**—Morris Drug Co. York Pa Composition Essentially tar extracts of plant drugs chloroform alcohol (48 per cent) and water. For coughs, croup inflammation of the lungs asthma, etc. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Byrd's Vapor Salve**—Blue Ridge Chemical Corp. Rocky Mount Va Composition Essentially volatile oils including camphor menthol and cinnamon in an ointment base of petrolatum and a small amount of fat. For lumbago rheumatism tonsillitis piles etc. Fraudulent therapeutic claims—[N J 23004 April 1935]

**Men The Eze**—Men Tho-Eze Co. Fort Dodge Iowa Composition Small amounts of volatile oils including wintergreen in petrolatum with a small amount of fat, if any, of animal fat. For inflammation piles eczema rheumatism catarrh, etc. Fraudulent therapeutic claims—[N J 23246 May 1935]

**Devonshire's Earth Salts**—F S Powers & Co. Crystal Lake Ill Composition Essentially a calcium phosphate and common salt with small amounts of sulfur also compounds of iron magnesium potassium and aluminum including carbonate and silicate. Cure-all. Fraudulent therapeutic claims—[N J 23245 May 1935]

**Paracelsus**—American Biochemical Corporation Cleveland Approximate composition Phosphates 11.08 per cent potassium 8.5 per cent chlorine, 22 per cent sodium 22 per cent sulfur 5 per cent and much smaller amounts of calcium carbon fluorine iron iodine magnesium, manganese and silicon. Tonic. Misbranded because claimed to contain no common table salt whereas, it contained a large amount of this. Fraudulent claim as to efficacy—[N J 23008 April 1935]

**Byron Herb Tablets**—Byron Herb Co. Worcester Mass Composition Essentially plant drug extracts including aloes podophyllum and red pepper. For liver kidney bladder and bowel troubles rheumatism nervousness, etc. Fraudulent therapeutic claims—[N J 23013 April 1935]

**Regalsu**—Regalsu Chemical Co. Detroit Composition Essentially phenolphthalein (1 grain per fluid dram) salts of bile acids salicylic acid and a fatty acid glycerine alcohol (24.8 per cent) and water. For gallstones etc. Fraudulent therapeutic claims—[N J 23014 April 1935]

**Murray's Salve**—Where Laboratories. Connerville Ind Composition Wool fat coal tar charcoal and water. For boils eczema gangrene erysipelas rheumatism etc. Fraudulent therapeutic claims—[N J 23009 April 1935]

**Albert's Spleen and Iron Tablets**—Albert Food Laboratories. Holly wood Calif Composition Essentially metallic iron a fishy oil compounds of calcium and phosphorus protein substances and vegetable material including berberine. Misbranded because of false and misleading claim "Contains actual spleen substance iron etc."—[N J 23018 April 1935]

**Albert's German Herb Lax Tonic**—Albert Food Laboratories. Holly wood Calif Composition Essentially anise fennel senna althea licorice frangula dog grass horsetail yarrow and elder flowers. For bad blood kidney disorders hemorrhoids rheumatism etc. Misbranded because not of German origin as represented and not composed of ingredients claimed in booklet also because of fraudulent therapeutic claim—[N J 23016 April 1935]



**Alberty's Hemoglobin Tonic**—Alberty Food Laboratories Hollywood Calif. Composition Essentially protein substances plant drug material including nux vomica and compounds of calcium and phosphorus Adulterated and misbranded because claims on wrapper 'Composed of Animal Extracts Hemoglobin Spleen Substances Pancreas and Spermin from the Interstitial Cells of Leydig and Neucleinic Acid from Wheat, were false and misleading —[N J 23018 April 1935]

**Molle (A "Brushless Shaving Cream)**—Cummer Products Co. Bedford Ohio Misbranded because of false and misleading claim that it was antiseptic —[N J 23011 April 1935]

**Cheno Restorex Tablets**—Alberty Food Laboratories Hollywood Calif. Composition Powdered plant material including a laxative drug with calcium and phosphorus compounds For obesity Misbranded because represented to contain no drugs but did contain drugs and because name Restorex was false and fraudulent as it would not restore the body to normal size and shape —[N J 23019 April 1935]

## Correspondence

### ANESTHESIA FOR THYROCARDIAC PATIENTS

*To the Editor*—In the paper on thyrocardiac disease by Dr L F Sise (THE JOURNAL, Nov 23, 1935, p 1663), in case 2 under deaths in his series of cases he stated that a woman, aged 39, had auricular fibrillation that she had an uneventful operation and convalescence until the fifth day, when she was given 21 grains (14 Gm) of quinidine to control the fibrillation and died very suddenly, and that cerebral embolism was thought to be the probable cause of death. Dr Sise does not state over what period the 21 grains of quinidine was given or how soon after the quinidine was given the sudden death occurred. The inference that quinidine was the cause of death or led to the cause of death is very strong in this case unless otherwise indicated. A good many things happen in diseased hearts which are not the fault of quinidine, but just a coincidence. I can illustrate that by an experience in a similar case. A woman, aged 53, with thyrocardiac disease and auricular fibrillation was seen on her sixth postoperative day after an uneventful operation and convalescence. It was suggested that quinidine be started on the next day, her seventh postoperative day, to correct the auricular fibrillation. On the night of the sixth day she had a cerebral embolism with a complete hemiplegia, the heart rhythm having become regular during this occurrence, and she died the next day. It was fortunate that no quinidine had been given in this case otherwise the drug would most certainly have been blamed for the death of the patient. Quinidine is a valuable drug in the treatment of certain heart irregularities and I feel that it should not be indicted until proved guilty.

NATHAN FLAXMAN, M D, Chicago

[This letter was referred to Dr Sise who replies.]

*To the Editor*—In regard to the comment on my paper entitled 'Anesthesia for Thyrocardiac Patients,' this paper was written by an anesthetist and was read before a group of anesthetists. The question as to the possible toxicity of quinidine was therefore considered somewhat beside the point for this particular occasion. However this question was submitted to the medical department of the Lahey Clinic, whose comment was as follows:

"Quinidine sulfate was given in this case as follows: Three grains at 9 a m, 6 grains at 12 noon, 6 grains at 3 p m and 6 grains at 6 p m. Death occurred at 7 30 p m. Shortly before the patient became unconscious her heart was observed to be beating violently and irregularly, an observation which was considered as ruling out ventricular fibrillation. Up to this time she was talking to a visitor and appeared to be feeling perfectly well.

'Quinidine may produce a rapid ventricular rate. Thus it was assumed that an embolus was discharged at that time. No

toxic symptoms had been noted up to the last dose at 6 p m, a fact which suggested but did not prove that death was not due to toxic respiratory paralysis from quinidine."

### MEMBERSHIPS IN PROFESSIONAL SOCIETIES

*To the Editor*—The doctor, beyond any other citizen, gives, without financial return, large blocks of his time and free use of his equipment.

The doctor, beyond any other scientist, does his research and writes his articles and books at his own expense.

These are reasons why fees for the upkeep of his professional societies should be kept as low as is compatible with reasonable service, not only in order to bring in as members the rank and file but particularly in order to encourage the student and thinker, the physician who takes time from his earning hours to continue reading and special training, analysis of his results and some research. Especially is this true during these years of hardship from shrunken or shattered incomes. At such times any big dues or high costs of attendance warrant sharp scrutiny.

There are notable examples of restriction of unproductive expenditures in medical organizations—and I have an impression that the American Medical Association is one of these on several lines, there are societies with duesless honorary memberships for older or retired members, there are others with junior memberships with lesser fees, there are cases of surplus collection of dues going for prizes. But there are still a number of organizations whose members have reason to protest at being forced to pay for such things as unduly costly meals and expensive meeting places and inordinate upkeep—to eat, meet or fleet, as it were.

One large specialist society in a chief city has throughout the depression charged its active members (exclusively male) nearly four dollars a meeting for each of eight monthly meetings, whether he attends and takes dinner or not, and is complainant that it has just reduced the tax to three dollars an evening. This serious penalizing of younger men was initiated—and its maintenance insisted on when it has been questioned at annual meetings—by members having the wealthiest practices. Such a policy is in line with that of medical and surgical specialist groups traveling to clinics in this country and abroad when they select the biggest steamers and the most fashionable hotels, all monotonously alike. The same pretentiousness is not unknown with certain national societies general and special, whenever plans are made for resorts and hostels and banquets of the showy type, although ample quarters and reasonable comfort may be available at less cost. This spirit is not absent with visiting societies when the local group, in demonstrating its hospitable good will starts a cycle of display and ostentation then return of courtesies involves competition hard on smaller communities, and on any group with an element of research workers.

In a plea for putting science and simplicity first, and dress suits and five dollar dinners and keeping up with the Joneses last one does not forget that formal papers and striking operations are not all that count at meetings. One close personal contact, one incidental idea from new research under way, one informal talk within the little group in one's own particular field—all these foci of scientific infection are often worth all the rest of the show put together. Friendships and relaxation—even golf—are grand parts of annual meetings. Nevertheless opportunities for this learning or this leisure do not need to entail a virtual enforcement of unessential individual expenditure.

Admitting that making and spending money is America's nearly universal measure of success is or is not splurge that handicaps science just a bit silly?

ROBERT L DICKINSON, M D New York

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

### AIR CONDITIONS IN OFFICES

To the Editor—We are interested in improving the working conditions in our office and in attempting to do so have encountered the question of the proper temperature to maintain during the winter months. Our office has approximately ninety persons working in it has an area of 5700 square feet, is heated by steam and obtains ventilation through two large suction fans. In the past the temperature has been varied from 68 to 75 F without obtaining general satisfaction. We are therefore attempting to determine what is the approved temperature for such an office. Another question that concerns us is that of humidity. Has there yet been devised any method other than complete air conditioning and insulation to maintain the proper humidity in offices? Your answers to these questions will be much appreciated.

W P ELMSLIE PH D Quiney Ill

ANSWER.—It is most laudable to manifest an interest in improving working conditions in offices through the conditioning of the air. There probably is no phase of health work that has been so neglected as air conditioning. In 1914 the Chicago Ventilation Commission, after careful study, called attention to the fact that it is the physical factors of temperature and humidity of the air which are the determining factors of comfort and working capacity. In 1923 the New York Ventilation Commission made a report (published by E P Dutton & Co) in which it was shown that when the temperature of the air is approximately 80 and the relative humidity is 86 the working capacity of the body is reduced about 25 per cent. On the other hand, air that is too cold and too low in humidity also has a deleterious effect on the human body and predisposes to colds and other acute respiratory infections which cause an alarming loss of time among school children, persons employed in offices, and industrial workers of all types.

Generally speaking, the atmospheric conditions that are most comfortable to the body are most conducive to work and good health. The fact that the temperature was varied from 68 to 75 without obtaining general satisfaction in all probability is due to too low humidity. Even when the atmospheric air is at 80 and the relative humidity is very low, the body may not be comfortable. On the other hand a temperature of 65 with the proper humidity makes an entirely satisfactory atmospheric condition. When the outside cold air of winter is admitted to a room and warmed, it expands and the relative humidity is markedly decreased. In fact, outside air (which has the proper humidity for its temperature) when heated in a room becomes so dry that it attacks everything containing moisture, even furniture. This throws a definite load on the human body, in its attempt to moisten the air before it reaches the lungs, and even attacks the skin in a good many instances to the point of being partially responsible for "winter itch".

The temperature that has been found best for the human body from the standpoint of appetite, working capacity and comfort is approximately 68 F when the air is properly humidified. The proper relative humidity for this temperature has been found to be approximately 40 per cent. It is very difficult to obtain 40 per cent humidity in buildings without the use of special humidifiers. A number of such devices are now on the market, but after installation the air should be carefully tested with a hygrometer to determine whether an adequate amount of moisture reaches the air.

### VERTIGO

To the Editor—What are the possible causes of acute vertigo associated with physical examination showing no abnormality? What is the mechanism of production of such acute vertigo? Is there any treatment by drug or otherwise to afford symptomatic relief? Please omit name.

M D Connecticut

ANSWER.—Acute vertigo is essentially a sensation of loss of balance or equilibrium usually accompanied by nausea and vomiting. This sensation may be either subjective or objective. The former is said to be present when the patient himself feels that he is falling or turning around objects while the latter is said to be present when various objects seem to whirl round the patient. The causes of this symptom may be either labyrinthine, otologic cerebellar cerebral or occasionally gastro intestinal disease. The most common causes of acute vertigo without objective evidence of organic disease are paroxysmal labyrinthine vertigo Meniere's disease (hemorrhage

into the labyrinth), acute labyrinthitis and cerumen in the external canal of the ear. At the present time the bulk of experimental evidence seems to point to some stimulus or to hyperirritability of the labyrinthine system as the mechanism in the production of acute vertigo. This may be due to postural changes, excessive amount of sodium ions, or vascular and catharral factors. The treatment should always begin with the removal of the cause if possible. If this cannot be done, one can restrict markedly sodium compounds in the diet. Ammonium chloride from 2 to 2.5 Gm (30 to 40 grains) may be given twice daily, after meals. If these measures do not help one may advise an intracranial section of the vestibular nerve. The tinnitus aurium that usually accompanies the cases of acute vertigo is seldom relieved unless the eighth nerve completely degenerates or is resected.

### POSSIBLE EPILEPSY

To the Editor—There recently has come under my care a youth aged 17½ years who was brought in with a chief complaint of an early morning convulsion occurring at intervals of from seven to fourteen days. Convulsions started at the age of puberty which in this case was 15 years. They have since occurred at more or less regular intervals despite treatment. For the last six months they have been a little more frequent, though not any more severe. His parents describe the seizure as follows: The spells almost always occur at the breakfast table about fifteen minutes after the boy has arisen from bed. He comes in the room and is more quiet than usual is morose and will not answer the usual good morning. His eyes have a staring expression and the pupils are dilated. The convulsion starts with a quick jerk—a flexion of the arms and legs and extension of the head. Convulsion is tonic never clonic. He immediately becomes very cyanotic his eyes are set and walled up and his mouth is drawn wide open with the lips covering the teeth. His hands become cold and his pulse cannot at this time be felt (by the mother). His pupils stay dilated for a few hours. On awakening he turns very pale is nauseated and his pulse is fast. He then always sleeps from fifteen to thirty minutes. Then he feels normal for the rest of the day except for a persistent headache for several hours. The patient's story is that on these mornings he feels as if he had not had sufficient sleep. The amount of sleep has no influence, however, on the occurrence of the convulsions since they sometimes occur on Sunday morning after he has had ten hours of sleep. He remembers having the initial jerk but does not remember anything after that until he awakens from his short sleep at which time it takes him some minutes to get oriented. Significant points in the history are that he has always been extra large for his age. At 16 he was 6 feet (183 cm) tall and weighed 200 pounds (91 Kg). There has been no further growth for the past twelve months. His head is large requiring a 7½ hat. He is very bright having led his class both in the elementary grades and in high school. He graduated from high school at 16. There is no family history of any mental disease or fits. In the past he has been treated for endocrinopathy, having received about thirty injections of pitressin and some other injections of a substance the nature of which he does not know all of no material benefit. Previous to his coming to me his case had never been diagnosed as epilepsy. The boy has not had polydipsia or polyuria. He has a normal distribution of hair the genitalia are well developed. I have made a diagnosis of the petit mal type of epilepsy. I had a stereogram of the skull made. It showed no bone erosion nor smoothing out of the convolutions as would be noted in chronic increased intracranial pressure. The sella turcica and the dorsum sellae are both normal in contour and in size. The roentgenologist's interpretation was no abnormality or pathology. There has been no convulsion for the past two weeks. In your opinion is my diagnosis of petit mal epilepsy justifiable? If so what is the prognosis? The parents are particularly concerned since the boy wants to study a profession. Can a cure be promised? What is the most beneficial treatment and how long must it be continued? Please omit name and address.

M D Tennessee

ANSWER.—There is an overwhelming probability that this is a case of ordinary epilepsy. In view of the comparatively short duration, one cannot as yet absolutely exclude the possibility of tumor or other organic brain disease. The longer the time elapsing without the development of new symptoms, the more certain does one become of the correctness of a diagnosis of epilepsy. The prognosis must be a guarded one, but with good treatment and good luck there is perhaps a 20 per cent chance of recovery. As to treatment the importance of the establishment of good habits as to diet and general hygiene should be emphasized. In order to determine whether sugar is bad or good for the patient and especially if he seems to have a fondness for sugar it would be advisable to make, if possible blood sugar determinations as near the attack as possible. In rare instances hypoglycemia may cause attacks like those described as occurring in this case. If the conclusion is that the case is one of ordinary epilepsy 0.1 Gm (1½ grains) of phenobarbital should be given in the evening and 0.03 Gm (one-half grain) after breakfast the dosage being increased or decreased as the condition warrants. If after several months of trial it is concluded that the patient did better on bromides one should return to a bromide combination. A mixture of sodium bromide and infusion of adonis vernalis might be tried,

one tablespoonful of the mixture to be taken three times a day after meals, but it might be found desirable to double the dose taken in the evening so that half of the desired daily amount of bromide will be taken at that time. If the attacks cease, the medication should be continued in decreasing doses for at least one year after the last attack.

### LEAD POISONING

*To the Editor*—A plumber aged 55, began to complain this spring of increasing lassitude, generalized muscular weakness and failing appetite. He noticed that his skin had assumed a dry, coppery consistency that his muscles had become flabby, that his hands were shaky and that his gait was slightly unsteady. He was annoyed by sensations of pins and needles in his extremities and complained that his hands had a numb, 'dead' feeling. He has worked at plumbing at intervals for the past twenty-two years. He has been engaged as a plumber continuously during the past two winters, however, and about six weeks before I examined him was subjected to a greatly increased amount of lead melting in his work of piping while employed by an industrial firm. The melting was done in huge containers outdoors for the purpose of salvaging lead from scraps. No protective devices were used against the inspiration of fumes containing lead or against the accidental ingestion of lead. The patient did not always wash his hands before eating. There is no history of constipation or typical abdominal colic, but about two weeks after commencing the special work cited he experienced a day with diarrhea and recurrent moderately severe abdominal cramps. Three of his fellow workers experienced similar symptoms at about the same time. The patient has since had fleeting lower abdominal mild cramplike sensations from time to time. He quit his work about two weeks before I first saw him because of his general feeling of ill being lassitude and weakness. He felt sluggish mentally. The patient is well developed but rather poorly nourished and seems abnormally apathetic. When I examined him there was definite muscular atrophy of the upper and lower extremities. No wrist drop was present, but the muscular strength of the hands and limbs was somewhat weaker than would be expected in a man engaged in heavy plumbing. At first the grip of the left hand was weaker than the right but later it shifted to the reverse. There was a slight decrease in pain and touch perception generally over the left extremities and the left side of the face. Over a small area on the dorsum of the left foot heat and cold perception were absent. These conditions were never marked and later subsided almost, if not quite entirely. There was no loss of position sense and the Romberg sign was negative. Biceps, triceps, cremasteric and patellar reflexes were present and not remarkable, but radial, abdominal and Achilles tendon reflexes could not be obtained. The Babinski sign was bilaterally negative. Otherwise general physical examination was not remarkable except for very loose carious lower incisors with evident root and gum infection. No lead line was present, and the optic disks were normal in appearance. Laboratory studies of the blood showed hemoglobin 92 per cent, color index 0.9, erythrocytes 4,700,000 and leukocytes 11,000, with a normal differential. Four separate smears at intervals revealed no stipple cells. The smears were taken while the patient was on a low calcium regimen with large doses of sodium bicarbonate several weeks after the last exposure to lead. At the same time a twenty-four hour specimen of urine slightly less than a liter in amount showed 0.345 mg. of lead. The urine was otherwise not remarkable. Examination of the gastric contents after a test meal given on a fasting stomach showed a diminished amount of free hydrochloric acid and total acid. Lumbar puncture revealed a clear colorless fluid with cell count of 5 under slightly increased pressure. There was no increase in globulin. The spinal fluid Wassermann and colloidal gold tests gave negative results. The blood Wassermann test was negative as was also the van den Bergh test. Blood urea nitrogen was 16 and the icteric index 3. The blood sedimentation rate was 20.2 mm. in thirty minutes and an additional 15 mm. in the next thirty minutes. Under a high calcium intake the patient's symptoms seemed to improve and he stated that he felt without question better although there was no great change later after a week on a substituted regimen consisting of a low calcium intake with large doses of sodium bicarbonate. At present a month after the patient was first seen he is more active mentally and physically, his numbness has nearly gone, pain and touch perception—never much affected—have improved and muscular strength has slightly improved. He has delayed recommended exodontia. From the point of view of a diagnosis of plumbism the case has puzzled me because of the absence of entirely typical symptoms and of stipple cells. However in view of the history of exposure, the presence of lead in the urine increased over the normal several weeks after the last lead contact (there has been no reason to suspect lead in the drinking water) and the presence of a few symptoms not inconsistent with a mild lead poisoning I have felt unable to rule out a possible plumbism. An early manifestation of subacute combined sclerosis of the spinal cord has been considered but the patient's improvement seemed somewhat to militate against it. A toxic myelitis (teeth) has also been considered but there has been no removal of focal infection to explain the apparent improvement. Concerning the possibility of an alcoholic neuritis it was learned that the patient drank rather heavily at one time but has largely desisted for many years. Do you feel that a diagnosis of plumbism is probable, merely possible or unlikely? Do you feel that the case is sufficiently strong to warrant the patient's receiving compensation? Please omit name and address. M D Massachusetts.

*ANSWER*—In many lead-using trades, including some branches of plumbing, most "old-time workers" present ill defined manifestations of chronic lead poisoning or sequelae of chronic lead poisoning. It is reasonably well established that such trades lead to a length of life shorter than the life expect-

tancy of workers in general. It is tenable to regard lead as an agent conducive to premature or accelerated degenerative processes. Often it is not possible to procure precise observations justifying a diagnosis of chronic lead poisoning or of sequelae to lead poisoning. Yet, in the experience of physicians handling large numbers of older workers long exposed to lead, many conditions are regarded as probably falling into this category even though exact proof may be lacking. In the present instance much of the data supplied strongly suggest that at least a portion of the patient's dysfunction may be attributed to lead. The absence of stipple cells or other remarkable changes in the blood does not rule out lead poisoning. At present it is well recognized that many patients poisoned by lead do not present significant changes in the blood. The necropsy on the bodies of long exposed workers in lead using industries frequently demonstrates changes in the brain and other portions of the central nervous system that may extensively account for the type of neurologic disturbances presented in the query. In the present instance it seems possible that this somewhat elderly workman may have been damaged by lead over a period of years without the condition reaching any noteworthy clinical manifestations. Then, as the result of recent periods of work with increased exposure to lead dust and fumes, a somewhat acute condition was superimposed on an already existing low grade set of manifestations earlier induced by lead. This is reflected in the content of lead in the urine, the 0.345 mg. being somewhat beyond the range of the usual content of lead in the urine of healthy persons. However, it is to be remarked that one single test for lead in the urine is of no great value in the diagnosis of lead poisoning. In this case, so well presented by the correspondent it is reasonable to believe that lead played some part in the disorder but that, in addition, beginning physiologic senility was an additional factor and infection from the mouth and other sources may have contributed to the totality of dysfunction. That portion of the disturbance attributable to lead again is to be subdivided: a portion resulted from recent severe exposure and a portion to the exposure during the preceding twenty-two years. In several states providing compensation for occupational diseases a favorable attitude would be extended to this patient's claim on the ground that a modicum of lead poisoning did exist and that in view of diagnostic uncertainties the claimant should be given the benefit of necessary doubts.

### HYPERALIVATION

*To the Editor*—I have been suffering from ptyalism especially when I get up in the morning. The amount of saliva that is excreted is unbearable. I have had a duodenal ulcer which is almost cured. I have used atropine but its effects are only temporary. Is there any treatment you can suggest for this condition? Would you advise recent gen treatments? Please omit name. M D Ohio.

*ANSWER*—A patient with hypersalivation should be studied first to determine the causative factors. These may be toxic, from mercury, bismuth, gold, arsenic, pilocarpine, physostigmine, choline, nicotine, emetine, apomorphine, ipecac, and so on or reflex, from local sources in the mouth near the salivary orifices, as, for example, faulty dentures, inflammatory processes in the mouth or upper respiratory tract, taste bud irritation or trigeminal neuralgia, or from distal causes such as other pathologic change in the gastro-intestinal tract or other nerve irritation. Constitutional sialorrhea may occur in persons with labial vagotonic nervous systems. In these individuals it is frequently associated with or parallels hyperhidrosis, seborrhea, gastric hyperacidity, obstipation, colic, phosphaturia or hyperinsulinism with hypoglycemia. The condition may be of central nervous origin as the result of pathologic changes in the medulla oblongata, pons or nucleus salivatorius. It may be of hormonal origin, as is occasionally seen in menstruation, premenstrual, at the climacteric and in pregnancy (Wemberger, *Walter Behandlung übermässiger Speichelbildung, Ztschr. f. Stomatol.* 32:904 [Aug 10] 1934).

The treatment must be directed at the etiologic factor and is in many cases of limited value. In general there should be limitation of fluid intake, reduction in dietary salts, avoidance of irritating foods and correction of constipation. Smoking should be stopped and diuresis stimulated. The local treatment should consist of astringent mouth washes and application of such astringents as 10 per cent strong protein silver directly to the salivary ducts. Atropine may be used but in an occasional patient has an atypical stimulating effect (Blume, *Wilhelm Arch. f. exper. Path. u. Pharmacol.* 127:153, 1928). In this particular case the etiologic factors should be considered in order to obtain a rational therapy.

In patients with duodenal ulcer ptyalism may be of reflex origin and parallel the gastric hypersecretion. It is also occa-

sionally due to gastric distention (Hisada, *K Salivary Secretions from Gastric Distention, Arch f d ges Physiol* 224 249, 1930) The various alkalis used in ulcer therapy may be etiologic factors and the control of gastric acidity should therefore be attempted by substitution of alkalis containing different cations than those at present used. It may perhaps be advisable to stop all alkalis. Attention should be directed to any dentures that may be locally irritating or made from materials to which this specific patient has an idiosyncrasy. Mild sedatives also are indicated in ptialism occurring in individuals with vagotonic nervous constitutions.

Finally, if no direct etiologic factor should be discovered, roentgen therapy is indicated but it should be administered carefully, for effective roentgen dosage may be followed by weeks of severe dryness of the mouth plus disturbance in taste. As a word of caution, the clinician should not forget that the moistening and lubricating of foods by salivary secretions are of importance and probably of real value to the patient with ulcer.

#### INHALATION ANESTHESIA IN WHOOPING COUGH

To the Editor—Recently a 3 year old girl in a generally fair condition was brought to me having a mastoid condition but with a mild attack of whooping cough. It was necessary to secure drainage of the pus external to the bone. I was advised by an anesthetist that any anesthetic by an inhalation preparation was too hazardous in the presence of whooping cough to justify its use. Accordingly I used a local anesthetic and made a Wilde incision, searching in vain for an opening in the bone but finding none. Kindly advise me as to the dangers if any from the use of inhalation anesthetics in the presence of whooping cough and the why of the danger.

M D, Pennsylvania

ANSWER—There are no data available concerning the effect of anesthesia by inhalation during whooping cough. It would seem, however, that the guarded administration of ether or ethylene gas in an uncomplicated case of pertussis would involve only a slightly increased hazard over that which exists in patients not affected with this disease. On the other hand, young patients with whooping cough are predisposed to respiratory disturbances, particularly bronchopneumonia. Consequently, inhalation anesthetics should be used with caution in whooping cough with respiratory complications.

#### WASSERMANN FAST SYPHILIS

To the Editor—A man aged 45 had chancroid (?) in 1910 without any specific treatment. Three years ago it was discovered that he had a positive Wassermann reaction. He then had twelve intravenous and twelve intramuscular treatments. Since February 1934 I have given him twenty seven doses of intravenous neosarsphenamine, forty-eight doses of intramuscular bismuth sodium tartrate and twenty five doses of intravenous mercurous iodine. Doses of two of these were usually given together and at weekly intervals because he could be home only once a week. The Wassermann test is now still 4 plus and the Kahn test 3 plus. He shows no symptoms or neurologic changes of any kind. Kindly advise me as to any mode of treatment to obtain a negative Wassermann reaction. Does such a persistent Wassermann reaction always indicate possible future trouble for the patient? Please omit name.

M D Iowa

ANSWER—This patient has received a creditable amount of treatment, an amount sufficient to reverse the reaction in the average patient with latent syphilis. The persistent serologic positivity may be due to several factors, such as cardiovascular or visceral syphilis, asymptomatic neurosyphilis or Wassermann-fast latency. Examination for cardiovascular involvement, particularly early aortitis, should be made. Likewise it should be borne in mind that asymptomatic hepatitis may produce Wassermann positivity. Asymptomatic neurosyphilis can be eliminated only by examination of the spinal fluid and it would seem advisable to carry out such a procedure in this case even though there is no pronounced evidence of central nervous system involvement. If both of these possibilities are eliminated it may be that the patient has a latent syphilis with a persistently positive Wassermann reaction.

Accordingly the subsequent treatment of the patient is dependent on the result of the search for cardiovascular visceral or nervous system involvements. If such examinations fail to reveal such complications the diagnosis of latent syphilis would seem warranted. The treatment of latent syphilis is dependent on numerous factors such as the age of the patient, duration of the syphilis, the previous amount of treatment, and the attitude of the patient toward his disease. In the case cited it would seem advisable to give him two courses of treatment with a bismuth compound fifteen injections to the course twice a year for the ensuing three years. Each year a general examination for evidence of cardiovascular or visceral involvement should be made. The Cooperative Clinics study has shown that latent syphilis tends to become serologically negative spontaneously when observed for ten years or thereabouts.

Accordingly, the persistent positivity of the Wassermann reaction does not necessarily mean future trouble for the patient. However, he should remain under observation as long as the Wassermann reaction remains positive.

#### SUITABLE CLIMATE FOR CHILD WITH CHRONIC BRONCHIAL INFECTION

To the Editor—I have under my care a 5 year old girl who had a moderately severe bronchopneumonia last spring. She made a very good recovery but coughed for about three months thereafter. There was no sputum. All examinations were negative. She is in a very good home and has the best care. Two weeks ago she developed another bronchopneumonia and is now making a good recovery. She was only moderately ill. The family is most anxious to do anything at all that will be best for this girl. Would you consider that it would be best for her to spend this winter in the South? If so what would constitute a desirable location? If she stays at home, would the use of ultraviolet rays be of advantage to her? Would cold vaccine be of value?

CHARLES TENHOUTEN M D Paw Paw Mich

ANSWER—A roentgenogram of the chest carefully made and interpreted, and tuberculin skin tests, would aid materially in excluding a tuberculous infection. With this condition excluded, the recurrent bronchopneumonia is probably due to some form of pneumococcal infection.

There can be no doubt that such a child is frequently benefited by a change of climate during the extreme cold of the winter. There are a number of places that may be selected where children with bronchial disorders do well. The climates of Arizona, New Mexico and regions of southern California east of the mountain range are favorable. Many also do well in southern Florida, either at the east or west coast resorts. It is doubtful whether ultraviolet irradiation would be of any benefit. The so-called cold vaccines are, to say the least, of questionable value.

#### VISION TESTING DEVICES

To the Editor—Being interested in parent teacher work I was called to see a piece of apparatus for checking roughly the vision of children who seem to have reading difficulties. The process is known as Betts Ready to Read Tests by Emmett A. Betts of Oswego N Y and the equipment is built by the Keystone View Company, Meadville Pa. I told the supervisor that I would investigate and report back to her. Are the instrument and method scientifically sound? And should the testing be done by a lay person? It would seem to me that the job should be under the medical department and the testing at least be done by the school nurse under the supervision of the school physician. The work so far has been done by the grades supervisor who saw the instrument and had some practice with it at summer school.

WILLIAM A WALL M D New York

ANSWER—The apparatus referred to made by the Keystone Company seems to be quite accurate for determining vision up to 20/20, which is normal. It is equally good for checking hyperopia and myopia. It does not exaggerate but rather minimizes the visual acuity as compared with that obtained by using the Snellen charts at 20 feet. There is no reason why a lay person with a little instruction in the use of the instrument should not be able to test the vision accurately.

#### CONDENSER FOR DARK FIELD STUDIES

To the Editor—In trying to select the most suitable condenser for the dark field work in an ordinary office practice which is the more practical one to select a paraboloid or a cardioid condenser? Going over the recent edition of syphilology by Dr Stokes does not help me to make decision. I understand that the cardioid condenser is of a more recent development and therefore better. However, the local dealer has a paraboloid condenser in stock and claims that it is just as good. Your definite advice will no doubt, clear up my confusion. I also wish your advice as to the type of illumination most desirable in this connection. Please omit name and address.

M D Washington

ANSWER—Either the paraboloid or the cardioid condenser will give satisfactory results for office dark field work.

The paraboloid condenser consists of a silvered parabola as a reflecting surface. It passes rays of light corresponding to numerical apertures between 1 and 140. Therefore light emerges from it only if optical contact is made between it and the slide. It is these rays of extreme obliquity which illuminate the object. The correct slide thickness of approximately 1.5 mm must be maintained to secure satisfactory results. A powerful source of light is required such as direct sunlight, the electric arc or the convertible substage lamp with 6 volt, 15 candle power mazda bulb or an adjustable microscope lamp with 6 volt 103 watt mazda bulb.

The cardioid condenser is a reflecting condenser, with good spherical correction and high light transmitting capacity. It should be used with an apochromatic oil immersion objective.

Slides of 1.2 mm should be used and the object should be contained in a medium of water or oil

Further advice may be obtained from the A H Thomas Company, Philadelphia, or Bausch and Lomb, or the Spencer Lens Company, which will furnish details and prices

#### DETERMINATION OF RACE

*To the Editor*—I have recently been called on by the mother to express an opinion concerning the probability of her year old girl baby having Negro blood in her veins. This question is occasioned by the fact that the child represents a brownish pigmented skin and black curly hair. Of the father whom I have not seen it is said authentically that he is of European Gypsy descent. Can you furnish me with any information regarding racial characteristics of the Gypsy people and also advise me whether or not there could be enough resemblance between the two races to make the matter of distinction debatable? Please omit name and address

M D California

*ANSWER*—The racial affinity of the child referred to could be determined only, if at all, by expert examination. The "Gypsies" of our times are a heterogeneous lot. Originally probably of Asia Minor derivation, they have become admixed more or less with all the people in whose territories they have roamed. They have no negroid blood, but somewhat dark skin, dark eyes and black hair are still common among them. The hair may be wavy to curly, but the curl is not of the negroid character

#### CONTINUOUS USE OF ASTRINGENT SOLUTIONS IN THE NOSE

*To the Editor*—I would appreciate it very much if you would furnish me with information as to whether or not the continued use of Neo-Synephrin, Frederik Stearns & Company as nose drops is detrimental in any way to the patient

W A Bloom M D Fayette Mo

*ANSWER*—The continued use of any astringent solution in the nose is to be deprecated. The condition that impels the patient to use medication of this kind should be investigated and remedied. Nevertheless, experience has shown that many people may continue the use of preparations of this character for a long time without any apparent ill effect. From time to time solutions of epinephrine or epinephrine-like substances when used over periods induce a form of reaction closely resembling hay fever, which clears up when the medication is stopped

#### USE OF DIPHTHERIA TOXOID

*To the Editor*—On October 17 I attempted to immunize a 6 year old girl (Schick positive) by giving the one shot alum precipitated diphtheria toxoid (0.5 cc.) all in one vial and containing one dose. The child jerked the needle slipped off and some, I do not know how much toxoid was spilled. I do not know how much if any the child got. Must I now wait two months to see whether she is still Schick positive before giving more toxoid? In the meantime she might be liable to get diphtheria of course. If a second dose should be given too soon would there be danger of too much toxoid killing her? Would a double dose of alum toxoid kill? What must I do? Would it be better now to go on the two dose toxoid giving one dose and the other in three weeks? I would appreciate a speedy reply by mail. Please omit name

M D Missouri

*ANSWER*—It is not necessary to wait two months to see whether the child is still Schick positive before giving more toxoid.

It is inferred from the communication that by "double dose" of alum precipitated toxoid (Lilly) 1 cc is meant. This amount should not be dangerous for the child.

It is safe to proceed at once as if the child had received no toxoid

#### EFFECTS OF EPINEPHRINE

*To the Editor*—A man aged 57 has bronchial asthma. He has been getting 1 cc of epinephrine every three hours for the last year and a half. He now has to have it nearly every hour. Could you let me know what the effects of this amount would have on his general condition as regards toxicity and circulatory effects? He has in the meantime tried changes of climate, subcutaneous resection, teeth extraction and elimination diets. You can omit my name

M D South Dakota

*ANSWER*—Epinephrine, given in such frequent dosage habitually, may result in a diminished epinephrine production by the patient's own adrenal glands in accordance with a general self-regulating tendency of the system. This would minimize the possible unfavorable effect on the circulation. Both of these effects are, however, likely to be less detrimental than permitting the patient to suffer from asthma. It would be wise to try to find a succedaneum for the epinephrine, e g in ephedrine, so as to enable at least the excessive frequency of the epinephrine injections to be reduced

#### RAYS FOR PRURITUS

*To the Editor*—A man, aged 31, for the past seven years has had an itch on the lower portion of the scrotum. The itchy area covers no more than about the size of a penny. At the onset of this condition he used to wear his trousers out from scratching just over this area. He has seen many physicians in various states including dermatologists. He has been treated with various ointments and the last dermatologist has even injected the area locally (I presume with alcohol) but with no results. I was thinking of a few x-ray exposures over this area. Any further suggestions that you might make as to etiology and therapy will be greatly appreciated. Please omit name if published

M D New York

*ANSWER*—Roentgen therapy to the scrotum is permissible if the testicles can be properly protected. Four or five doses of one-fourth skin unit, 75 roentgens, unfiltered, can be safely given to a small area of the scrotum. An equivalent exposure to supersoft or grenz rays is safer and equally effective. The probability is that the condition is a localized neurodermatitis

#### TESTING COLOR BLINDNESS

*To the Editor*—What practical system would you advise for the color blind test in industry?

CLIFFORD C ROBINSON M D Indiana Harbor Ind.

*ANSWER*—For a rough and usually sufficient test of color vision the Stilling or Ishihara colored plates enable the examiner to determine actual color blindness quickly. These plates contain numbers in blended colors which the normal eye can read easily and quickly in daylight. For really accurate testing the anomaloscope, which tests each eye separately by matching prismatic colors, is by all odds the best and the most accurate. The instrument is expensive and the test requires some little time

#### UNILATERAL SWEATING

*To the Editor*—I will appreciate it if you will enumerate for me the chief things that can cause sweating of half of the body. Please omit name

M D Alabama

*ANSWER*—Sweating of half of the body is a symptom that has not adequately been linked to a definite etiology. Apparently, unilateral involvement of the central sympathetic pathways and sympathetic centers may, by release of lower activity produce sweating. It is not known just where those lesions must be. Unilateral sweating has been seen in cases of epidemic (lethargic) encephalitis, of lesions of the brain stem, in tumors involving the brain stem, and occasionally in unilateral frontal lobe lesions. It is difficult to ascertain at what level in the central pathways the lesion resides except by the help of other localizing symptoms

#### PREVENTION OF RABIES

*To the Editor*—About eighteen months ago two members of the nursing staff here were exposed to a proved case of human rabies and took the fourteen dose Semple antirabic vaccine. Again yesterday these nurses were exposed to a proved case of human rabies. They were not bitten in either case but handled the children. Members of the staff have expressed conflicting opinion as to the advisability of their repeating the prophylactic treatment. Please give us the benefit of your opinion. Kindly omit name

M D Tennessee

*ANSWER*—Rabies is communicated only by inoculation and consequently there would be no need for giving any prophylactic treatment to the nurses in question

#### CAPILLARY BREAKDOWN

*To the Editor*—Please comment on "capillary breakdown." How is it used in determining the cause of subconjunctival hemorrhage? What is the method and what is its significance? Please omit name

M D Ohio

*ANSWER*—Capillary breakdown is recognized by shock with all its various symptoms and in milder cases by swelling of the liver and spleen. The capillaries of the skin have been examined with a microscope, and it might be possible to apply this to the conjunctiva, though probably sufficient information could be obtained by the use of the slit lamp. This method has not been used in determining the cause of subconjunctival hemorrhage

#### NO INCOMPATIBILITY IN PERTUSSIS AND TETANUS IMMUNIZATION

*To the Editor*—Some one has made the statement that if a child is immunized against pertussis by the Krueger method it would render the future administration of serum for tetanus ineffective. Is this correct?

JOHN H MURPHY M D Geneseo N Y

*ANSWER*—No



## Medical Examinations and Licensure

### COMING EXAMINATIONS

**AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY** Written examination for Group B applicants will be held in various cities throughout the country March 14. Oral examination for Group A and B applicants will be held in Kansas City Mo May 11-12. Applications for written examination should be filed with the secretary before Jan 15. Sec Dr C. Guy Lane, 416 Marlboro St Boston

**AMERICAN BOARD OF ONSTETRICS AND GYNECOLOGY** Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28. Applications must be filed not later than February 28. Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11-12. Applications must be received not later than April 1. Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)

**AMERICAN BOARD OF OPHTHALMOLOGY** Kansas City Mo May 11 and New York Oct. All applications and case reports must be filed sixty days before date of examination. Asst Sec Dr Thomas D Allen, 122 S Michigan Ave Chicago

**AMERICAN BOARD OF OTOLARYNGOLOGY** Kansas City, Mo, May 9. Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha

**AMERICAN BOARD OF PEDIATRICS** Kansas City Mo May 9. Sec Dr C A Aldrich 723 Elm St Winnetka Ill

**AMERICAN BOARD OF RADIOLOGY** Kansas City Mo May 8-10. Sec Dr B R Kirkin May Choie Rochester Minn

**CALIFORNIA** Reciprocity San Francisco Jan 15. Sec Dr Charles B Phikham 420 State Office Bldg Sacramento

**CONNECTICUT** Basic Science New Haven Feb 8. Prerequisite to license examination. Address State Board of Healing Arts 1895 Yale Station New Haven

**DISTRICT OF COLUMBIA** Washington Jan 13-14. Sec. Commission on Licensure Dr George C Ruhland 203 District Bldg Washington

**HAWAII** Honolulu Jan 13-16. Sec Dr James A Morgan 48 Young Bldg Honolulu

**ILLINOIS** Chicago Jan 28-30. Superintendent of Registration, Department of Registration and Education Mr Homer J Byrd Springfield

**IOWA** Basic Science Des Moines Jan 14. Sec Dr Edward A Benbrook Iowa State College Ames

**MINNESOTA** Minneapolis Jan 21-23. Sec Dr Julian F Du Bois 350 St Peter St St Paul

**NATIONAL BOARD OF MEDICAL EXAMINERS** Parts I and II Feb 12-14 May 6-8 June 22-24 and Sept 14-16. Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

**NEBRASKA** Basic Science Omaha Jan 14-15. Dir Bureau of Examining Boards Mrs Clark Perkins State House Lincoln

**NEVADA** Reciprocity Carson City Feb 3. Sec Dr Edward E Hamer Carson City

**NEW YORK** Albany Buffalo New York and Syracuse Jan 27-30. Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany

**PENNSYLVANIA** Philadelphia Jan 14-18. Act Sec Mr Clarence E Ackley 400 Education Bldg Harrisburg

**SOUTH DAKOTA** Pierre Jan 21-22. Dir Division of Medical Licensure Dr Park B Jenkins Pierre

**VERMONT** Burlington Feb 12. Sec Board of Medical Registration Dr W Scott Nav Underhill

**WASHINGTON** Seattle Jan 13-15. Dir Department of Licenses Mr Harry C Huse Olympia

**WISCONSIN** Madison Jan 14-16. Sec Dr Robert E Flynn 401 Main St La Crosse

**WYOMING** Cheyenne Feb 10-11. Sec. Dr G M Anderson Capitol Bldg Cheyenne

### Wisconsin June Report

Dr Robert E Flynn secretary, Wisconsin State Board of Medical Examiners reports the written and practical examination held in Milwaukee, June 25-28 1935. The examination covered 19 subjects and included 100 questions. An average of 75 per cent was required to pass. Ninety five candidates were examined, all of whom passed. Twenty physicians were licensed by reciprocity. The following schools were represented

| School  | PASSED                       | Year Grad | Per Cent         |
|---|------------------------------|-----------|------------------|
| Loyola University School of Medicine          | (1935)                       | 84        | 87               |
| Northwestern University Medical School        | (1935) 80 83 84 88           | (1934)    | 84 86            |
| Rush Medical College                          | (1934) (1935) 80 82 83 84 86 | (1934)    | 84               |
| University of Louisville School of Medicine   | (1934)                       | 80        | 82               |
| Harvard University Medical School             | (1931) 8                     | (1934)    | 80               |
| Tufts College Medical School                  | (1933)                       | 77        |                  |
| University of Minnesota Medical School        | (1934) 81                    | (1935)    | 82 84            |
| University of Pennsylvania School of Medicine | (1934)                       | 86        |                  |
| Medical College of Virginia                   | (1934)                       | 83        |                  |
| Marquette University School of Medicine       | (1934) 82 (1935)             | 80        | 80               |
| 80 81 81 81 82 82 82 82 82 82 83 83           |                              |           |                  |
| 83 83 83 83 83 83 84 84 84 84 84 85 85        |                              |           |                  |
| 85 85 85 85 85 86 86 86 87 87 87              |                              |           |                  |
| University of Wisconsin Med School            | (1933) 86 87 (1934)          | 79        | 81               |
| 81 81 83 84 84 84 84 84 85 85 85 85           |                              |           |                  |
| 85 85 86 86 86 87 88 (1935)                   | 81                           | 86        |                  |
| School  | LICENSED BY RECIPROCITY      | Year Grad | Reciprocity with |
| College of Physicians and Surgeons of Chicago | (1906)                       |           | Illinois         |
| Lovela University School of Medicine          | (1931) 2                     | (1933)    | Illinois         |
| Northwestern University Medical School        | (1925) (1929)                | (1933)    | Illinois         |
| Rush Medical College                          | (1925)                       | (1930)    | Illinois         |
| University of Illinois College of Medicine    | (1914)                       |           | Illinois         |

|  |        |           |
|--|--------|-----------|
| Harvard University Medical School            | (1914) | Mass      |
| University of Michigan Medical School        | (1929) | Michigan  |
| University of Minnesota Medical School       | (1933) | Minnesota |
| Missouri Medical College                     | (1899) | Missouri  |
| St. Louis University School of Medicine      | (1929) | Missouri  |
| Washington University School of Medicine     | (1931) | Missouri  |
| Creighton University School of Medicine      | (1933) | Nebraska  |
| University of Rochester School of Medicine   | (1932) | Maryland  |
| University of Cincinnati College of Medicine | (1932) | Ohio      |
| Jefferson Medical College of Philadelphia    | (1922) | Ohio      |
| Medical College of Virginia                  | (1933) | Virginia  |

\* Average grade not reported. License has not been issued.  
† M D degree has not been issued.

### Minnesota October Report

Dr Julian F Du Bois, secretary, Minnesota State Board of Medical Examiners, reports the oral, written and practical examination held in Minneapolis, Oct 15-17, 1935. The examination covered twelve subjects and included sixty written questions. An average of 75 per cent was required to pass. Forty-seven candidates were examined, all of whom passed. Four physicians were licensed by reciprocity and six physicians were licensed by endorsement. The following schools were represented

| School  | PASSED      | Year Grad | Per Cent |
|---|-------------|-----------|----------|
| College of Medical Evangelists                    | (1934)      | 85        | 82       |
| Stanford University School of Medicine            | (1934)      | 84        | 6        |
| University of Colorado School of Medicine         | (1932)      | 85        | 2        |
| Emory University School of Medicine               | (1933)      | 86        | 1        |
| Northwestern University Medical School            | (1932) 86 6 | (1935)    | 86       |
| Indiana University School of Medicine             | (1934)      | 91        |          |
| State University of Iowa College of Medicine      | (1930)      | 85        | 2        |
| University of Louisville School of Medicine       | (1931)      | 89        | 4        |
| Johns Hopkins University School of Medicine       | (1933)      | 91        |          |
| Harvard University Medical School                 | (1934) 84   | 86        |          |
| University of Minnesota Medical School            | (1932)      | 80        | 5        |
| (1933) 89 2 (1935) 81 4 * 82 6 * 83 1 * 84 1      |             |           |          |
| 84 1 87 1 * 87 2 * 88 4 * 88 5 89 1 * 89 3 * 89 3 |             |           |          |
| 90 1 * 91 2 91 6 * 93 1 * 93 2 *                  |             |           |          |
| Washington University School of Medicine          | (1933)      | 86        | 6        |
| University of Nebraska College of Medicine        | (1930) 82 3 | (1932)    | 87       |
| University of Cincinnati College of Medicine      | (1934)      | 85        |          |
| University of Oregon Medical School               | (1932) 89 1 | (1933)    | 88       |
| Jefferson Medical College of Philadelphia         | (1933)      | 86        | 4        |
| University of Pennsylvania School of Medicine     | (1931)      | 90        | 1        |
| (1932) 84 6 (1933) 87 3, (1934) 90 2              |             |           |          |
| Medical College of Virginia                       | (1932)      | 88        |          |
| University of Wisconsin Medical School            | (1934)      | 86        | 2        |
| University of Manitoba Faculty of Medicine        | (1932)      | 86        | 6        |
| University of Western Ontario Medical School      | (1932)      | 89        | 6        |

| School                                      | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|---|-------------------------|-----------|------------------|
| University of Colorado School of Medicine   | (1934)                  |           | Colorado         |
| Creighton University School of Medicine     | (1931)                  |           | Nebraska         |
| University of Pittsburgh School of Medicine | (1931)                  |           | Penn             |
| Marquette University School of Medicine     | (1933)                  |           | Wisconsin        |

| School                                      | LICENSED BY ENDORSEMENT | Year Grad | Endorsement of |
|---|-------------------------|-----------|----------------|
| Northwestern University Medical School      | (1930) N B M Ex         |           |                |
| Johns Hopkins University School of Medicine | (1934) N B M Ex         |           |                |
| University of Minnesota Medical School      | (1933), (1935) N B M Ex |           |                |
| University of Nebraska College of Medicine  | (1932) N B M Ex         |           |                |
| Marquette University School of Medicine     | (1935) N B M Ex         |           |                |

\* This applicant has received an M B degree and will receive his M D degree on completion of internship

### South Carolina June Report

Dr A Earle Boozer, secretary, State Board of Medical Examiners reports the written examination held at Columbia June 25-27 1935. The examination covered 17 subjects and included 70 questions. An average of 75 per cent was required to pass. Forty-six candidates were examined all of whom passed. Two physicians were licensed by reciprocity. The following schools were represented

| School   | PASSED                  | Year Grad | Per Cent         |
|--|-------------------------|-----------|------------------|
| University of Georgia School of Medicine   | (1933)                  | 86        |                  |
| Rush Medical College   | (1921)                  | 82        |                  |
| Tulane University of Louisiana School of Medicine  | (1934)                  | 81        |                  |
| Harvard University Medical School  | (1929)                  | 85        |                  |
| Medical College of the State of South Carolina   | (1934)                  | 86        |                  |
| (1935) 75 76 78 78 79 80 80 80 80 80 81, 81 81 81 81 81 82 82 82 82 82 82 83 83, 83 83 84 84 84 85 85 86 87 89 |                         |           |                  |
| McBarray Medical College   | (1935)                  | 80        |                  |
| Vanderbilt University School of Medicine   | (1931) 85               | (1934)    | 86               |
| University of Texas School of Medicine   | (1921)                  | 75        |                  |
| School   | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
| University of Maryland School of Medicine  | (1912)                  |           | N Carolina       |
| Medical College of the State of South Carolina   | (1925)                  |           | N Carolina       |

## Book Notices

**Forensic Medicine A Text Book for Students and a Guide for the Practitioner** By Douglas J A Kerr M.D. F.R.C.P.E. D.P.H. Lecturer on Forensic Medicine in the School of Medicine of the Royal Colleges Edinburgh Cloth Price \$5.50 Pp 311 with 79 illustrations London A & C Black Ltd 1935

This was written as a textbook for medical students in England and Scotland and as a guide for practitioners there in the solution of problems of forensic medicine. The author defines forensic medicine (page 1) as "the application of medicine to the purposes of the law and the administration of justice," including within its scope "a knowledge of the laws which have been made to insure the peace and order of the community which particularly affect the practitioner in his professional duties." It covers succinctly the principles of English and Scottish law relating to the practice of medicine and the elementary facts of the science and art of medicine applicable to the solution of problems of law. Its value in the United States is diminished by the failure of the American publishers to supplement its discussions of English and Scottish law by statements of analogous law in this country. Unfortunately, too, the book bears some internal evidence of hurried preparation and inadequate editing. It is hardly too much to say, however, that these deficiencies are offset by the numerous, well selected and remarkably well executed illustrations, culled, with few exceptions, from the author's medicolegal practice.

The statements of law with reference to the legal qualifications and duties of physicians, legal procedure in cases of death, legal aspects of insanity and legal relations of poisons and poisoning may be useful to the American reader who is already informed with respect to the corresponding laws in the United States and in his own state, but the American reader who is not so informed may be misled by such statements. The statement, for instance (p 28), that a person who commits a felony may be arrested with a warrant is correct, but it unfortunately implies that a felon cannot be arrested without a warrant, which is incorrect. As a matter of law having more direct bearing on the physician, the statement (p 29) that a medical man who testifies as to the extent and position of a wound is a common witness, but that if he gives an opinion as to the effect of the wound he is an expert witness, is hardly in keeping with practice in the United States, where a physician who testifies to facts that he has observed in the course of his professional work can be required to give his opinion based on those facts, without qualifying as an expert witness and without compensation other than that of a common witness. The author's advice as to the dress and demeanor of a professional witness (p 29) is interesting.

When taking the oath the witness must not wear gloves and women witnesses should keep this in mind.

When in the witness box the medical man should remember that it is a solemn occasion and that the jury have to assess the value and reliability of his evidence. Much depends on the impression they form of the doctor himself. He should therefore conduct himself as becoming a responsible professional man. He should dress accordingly. In a quiet professional manner and before entering the witness box should remove his gloves and overcoat. It is not necessary for him to wear a morning coat but to appear in a sporting suit as sometimes happens is only to leave the jury with the impression that he does not take his profession seriously and consequently considerably detracts from the value of his evidence.

This corresponds in principle with the advice recently given by an American writer (Springstun, Humphreys Doctors and Jurors The Essentials of Medical Jurisprudence, Philadelphia, P Blakiston's Son & Co, Inc., 1935, pp 94-95).

The statement (p 46) that a dead body, after the first few hours after death, usually cools at the rate of  $1\frac{1}{2}$  degrees Fahrenheit an hour may leave the impression that the body continues to cool at that rate, which is hardly in accordance with fact and is misleading when read in connection with the statement that the degree of cooling indicates the proximate time that has elapsed since death. Similarly, the statement (p 73) that a blood stain caused by blood dropping on the stained object is round and shows numerous little splashes about its edges may mislead, it ignores the fact that the angle of incidence of the blood on the stained surface its size and momentum, and the texture and shape of that surface determine

the shape and characteristics of the resulting stain. Mammalian blood corpuscles are hardly described correctly when it is stated that they are circular, non-nucleated, biconcave disks, about  $\frac{3}{8}$  200 inch in diameter, the only exception being in the camel, in which the blood corpuscles are oval and non nucleated, for this ignores the existence of white blood corpuscles and differences in the sizes of red blood corpuscles in mammals of different species.

Every effort seems to have been made to bring this book down to date, for, within the brief space that it affords, the author has discussed the medicolegal significance of blood grouping and modern methods for the determination of the degree of alcoholic intoxication from which a person is suffering. References are made, too, to the use of ultraviolet rays to facilitate the discovery of blood and seminal stains and the modern methods for identifying the weapons from which given projectiles have been fired, but these references are hardly more than suggestive of the possibilities of the methods referred to.

On the whole, Kerr's Forensic Medicine will form an interesting addition to the library of any one engaged in medicolegal activities. Because it contains no information concerning the laws of the United States relating to the practice of medicine and the rights and duties of medical practitioners, the book can hardly be recommended for the use of the physician or medical student who desires to rely on a single volume for his information covering the forensic aspects of medical practice.

**Sammlung psychiatrischer und neurologischer Einzeldarstellungen.** Herausgegeben von Prof. Dr. A. Bostroem und Prof. Dr. J. Lange. Band VIII. Über Myotonie klinische und erbbatologische Beiträge von Dr. med. et phil. Heinz Boeters. Aus der Psychiatrischen und Neurologischen Universitätsklinik Breslau (Direktor Prof. Dr. J. Lange). Paper. Price 6.60 marks. Pp 82 with illustrations. Leipzig Georg Thieme 1935.

This monograph is divided into eight chapters. 1 The results of clinical and theoretical investigations of myotonia. In this chapter the myotonic diseases are discussed from all their aspects, including among other points the pathogenesis, relationship to other diseases, prognosis and treatment. 2 The results of earlier investigations of Thomsen's disease and myotonia dystrophica (atrophica). 3 Review of the authors' own material. 4 The results of an investigation of the family tree in one of the author's cases of myotonia. In this investigation he found myotonia, endocrine and atrophic anomalies without myotonia, feeble-mindedness, signs of epileptoid character, various entities, neurologic and body deformities, psychoses, neuromes and tuberculosis. 5 The course of the myotonia under consideration as a special theoretical hereditary problem. 6 The significance of myotonia from the point of view of hygiene and geneology. 7 Illustrative cases. 8 Bibliography. There are twenty family trees listed as well as fourteen tables and a map of Czechoslovakia. This monograph is recommended to neuropsychiatrists interested in myotonia and heredity.

**The Delinquent Boy and the Correctional School.** By Norman Fenton, Director of the California Bureau of Juvenile Research. With the collaboration of Jessie C. Fenton, Margaret E. Murray and Dorothy E. Tyson. Psychologist Whittier State School. Paper. Price \$1.50. Pp. 182 with 8 illustrations. Claremont California Claremont College Guidance Center 1935.

Physicians are becoming more and more interested in the problems created by juvenile delinquents. One of the means of treating this problem is by means of commitment of the delinquent boy or girl to correctional institutions the young boy is sent to what is known as the "industrial school." Only recently, however, have psychiatry and medicine been called on to play a part in the correction of the juvenile delinquents who are incarcerated in such a school, so that the present volume is virtually the first offering of its kind. Various parts of the problem presented by correctional school treatment have been dealt with by other writers, and the annual report of each state department in which there is such a school usually contains a summary of the techniques used and the principles of management that lie behind the administration of the particular school. While there are many schools that are approaching this problem in a modern spirit, the one at Whittier, Calif. at which the present author was chief psychologist and director of the child guidance unit, has long been known as one of the most prominent. The major portion of this publication is a description of the techniques used at the Whittier school and the

information obtained over a period of time by the research department of the school. The study is introduced by a description of the modern state correctional school in which the author shows the difference in the administration of the school of today and the administration of the same school a few decades ago. One of the principles stressed in the improvement of the Whittier school was the individualistic treatment of the delinquent boy. The boys are studied by specialists, who discuss the case in a child guidance conference, and one chapter is devoted to the methods used in such a conference. Several chapters are devoted to the statistics revealed by the study of the background and a study of the delinquent child himself, and this material is carefully tabulated so as to give a cross section of the influences and traits of the typically delinquent child, particularly the one found in California. The remainder of the book is devoted to a discussion of academic and vocational education plans and social guidance techniques, as well as the effort made by the school to prepare the boy for return to the community, these are all thoroughly discussed in a most interesting style. There is an analysis of the result of placement and there are two appendices, one discussing the morale of the institution and the other giving an excellent bibliography effectively covering most of the literature on juvenile research that might have any bearing on these problems. Probably the book will be of considerable value to physicians particularly those who have to face the problem of juvenile delinquency. It should be distinctly revealing to the penologist, the criminologist and the psychiatrist who practices child guidance but it is so well written, so interesting, and presents such a modern view that it might even be perused by the socially minded physician merely as a cultural venture.

**Personality Maladjustments and Mental Hygiene. A Textbook for Psychologists, Educators, Counselors and Mental Hygiene Workers.** By J. E. Wallace Wallin, Ph.D., Director of the Division of Special Education and Mental Hygiene for the Delaware State Department of Public Instruction and the Wilmington Public Schools. Cloth Price \$3. Pp 511. New York and London: McGraw Hill Book Company Inc. 1935.

This volume is intended as a textbook for psychologists, educators, counselors and mental hygiene workers. It is composed of eleven chapters, which are divided into two parts, the first part dealing with the concepts and objectives of mental hygiene, the various factors concerned in a mental hygiene problem and the type of child that can be studied as a mental hygiene problem. The second part is an effort to describe the study of personality maladjustments with some preventive and remedial suggestions. In this part such mechanisms are studied as the nature of inferiority feelings, evasions, the minimizing of difficulties, regressive and day dreaming adjustments, compensatory reactions, conflicts and dissociations, inhibitions and repressions. Each topic in the book proper consists of a number of summarizing sections a page or two in length. The style is fairly light and the topical discussions might be considered accurate but superficial; the discussions present no novel features but such information as might be included is substantial and would be accepted as accurate by most workers in this field. Under most of the topics one is able to find one or more brief case histories that are expected to illustrate the topic. In some cases they do not do this, in others it requires little knowledge of the subject to realize that only the most obvious angle of the case has been touched. The patient's opinion about his case is given but interpretive material is largely absent. These reports although interesting, are in many instances padding rather than educative material. There is an appendix containing suggestions for overcoming stage fright and other forms of fear and a bibliography that is well organized and fairly thorough. The bibliographic material however, is not evaluated in the sense of making it readily useful for teaching purposes. In evaluating the author's point of view, one would probably call him an eclectic with a rather greater tendency toward the use of adlerian concepts than freudian. One wonders whether he is even truly familiar with the material of psychopathology, for many of the sections are mere adaptations from the conventional textbooks of abnormal psychology rather than reports of the work of those who are deeply interested in mental hygiene and clinical psychopathology. One impression that is given is that the author thinks that almost any one who is at all familiar with psychologic concepts can

treat problem children, an idea with which psychiatrists would heartily disagree, and, as a matter of fact, the contributions of psychiatry and the position of the psychiatrist in dealing with this problem are largely neglected by Wallin. In spite of the size of the volume, the author attempts to cover so much ground that important topics such as special reading difficulties, are given only a few pages even though they are topics more specifically treatable by psychologists like the author rather than by a psychiatrist. As a textbook for college students in mental hygiene, in spite of some statements with which there will be disagreement on the part of many instructors, the book should serve a distinct purpose. It is more to the point and is a more teachable book than most of the others that have been presented in this field. For psychiatically trained mental hygienists it will probably prove disappointing. For the casual reader in mental hygiene who does not attempt to do any treatment, the book may prove to be highly interesting and even inspiring.

**The Pathology of Internal Diseases.** By William Boyd M.D. M.R.C.P. F.R.C.P. Professor of Pathology in the University of Manitoba. Second edition. Cloth Price \$10. Pp 904 with 335 illustrations. Philadelphia: Lea & Febiger 1935.

This work will continue to be a source of inspiration and enjoyment to the advanced medical student because of the pleasing style with which the author presents the pathologic picture of disease. It is both interesting and refreshing to see how Boyd has made the dead flesh of morbid anatomy into a subject of absorbing interest. His general plan is to present the morphologic pattern of the disease under discussion and to weave the functional and clinical features into it to give more color to the picture. Historical allusions and quotations add to the value of the portrait. In this edition new sections have been added on several subjects, including circulatory failure, the mechanism of cardiac pain, von Gierke's disease, erythroblastic anemia, and Schüller-Christian's disease. Numerous portions have been rewritten and several new illustrations added. The illustrations are noteworthy and approach perfection. The list of recent references at the end of each chapter adds materially to the value of the book. Objection may be made to certain statements in which problems are considered as settled facts. For example, some will question the statement that 'the primary lesion in lobar pneumonia is beyond peradventure an inflammation of the interstitial framework of the lung.' This ignores completely the results in experimental lobar pneumonia of the dog as brought out in the studies by Robertson and his associates. It should be said however, that the author in general attempts to keep facts and theories in their proper position. This book, as a whole, fills a definite need in the field of special pathology. Advanced medical students will find it particularly useful in their transition from preclinical to clinical medicine but all students of pathology will use it with pleasure and profit.

**Speech in Childhood: Its Development and Disorders.** By George Seth, M.A. B.Ed. Ph.D. Research Fellow Yale University, and Douglas Guthrie M.D. F.R.C.S. F.R.S.E. Consulting Aural Surgeon Royal Hospital for Sick Children Edinburgh. Cloth Price \$3.50. Pp 224 with 46 illustrations. New York & London: Oxford University Press 1935.

While nationalism in medicine should be frowned on, the present work makes one realize how much more satisfactorily corrective work in disorders of speech has been developed in this country than in Great Britain. Seth and Guthrie's book, while showing scholarship, is many years behind books written on the same subject that have been published recently in this country. Its point of view is largely otolaryngologic, and what psychology there is in it is of a classic nature rather than experimental. The anatomy and physiology of the speech mechanism are accurately and fairly well delineated. There is a short discussion of relationship of speech to the brain, and the physics of speech is taken up in some detail. The psychologic chapters stress the development of speech in the child from the point at which he makes inarticulate sounds to the point at which he is able to express himself adequately. This material is largely taken from those writers on the subject who have used observational methods to study the psychologic development of speech in children. There are chapters on the relationship of hearing speech disorders of articulation, stuttering, the singing voice in childhood and the organization of

a speech clinic. The chapters discussing disorders of speech from a clinical standpoint consist largely of a brief description of the clinical entities rather than an analysis of the elements that go into these disorders—the American technic. The authors seem to be entirely unaware of the strides that have been taken in speech correction methods on this side of the Atlantic. Psychiatric treatment of speech disorders is ignored. Much work has been done in America by such experts as Stinchfield, West, Gibbons, Muyskens, Weisenburg and Bluemel, which is well known among people who are doing speech correction but seems to be beyond the knowledge of the writers of the present work. Seth and Guthrie's plan for organizing a speech clinic is naive to say the least and consists largely of environment analysis combined with a physical examination. Emotional factors are briefly mentioned. The use of standardized tests, which should be familiar to the psychologic co-author, is largely ignored. Application of highly developed physical and psychologic apparatus, such as that devised by Travis and his associates in Iowa, is not listed as a technic. There are also some errors of fact, for instance giving Travis complete credit for the cerebral dominance theory, even though he in his own book refers to Orton as being the important person in developing this concept. Even in the field where the authors seemed to be best acquainted, that of the genesis of language, the work of de Laguna is ignored. There is a bibliography, which of course is incomplete, for to none of the authorities that have been mentioned is there any reference. It is difficult to evaluate the place of this book in the library of the speech expert, for he is undoubtedly able to cull for himself, if he has any knowledge of the literature, more valid and modern material on speech correction than is given here. Generally speaking, however, the factual material is fairly well substantiated and in this respect the book might be recommended.

**Immunology.** By Noble Pierce Sherwood, Ph.D., M.D., Professor of Bacteriology, University of Kansas. Cloth, Price \$8. Pp. 608 with 35 illustrations. St. Louis: C. V. Mosby Company, 1935.

The rapid development of many phases of immunology within recent years has created an urgent need for an up-to-date textbook. The present volume is an attempt to answer this need by bringing the many facts and ideas of the field into a form easily available to medical students and for others who have had training in pathogenic bacteriology, inorganic and organic chemistry and who are interested in the underlying principles involved in infection, resistance and diagnostic laboratory tests. The book begins with a general consideration of infection and infectious agents, the host-parasite relationship, anatomic and physiologic factors in infection and resistance of the individual, and inflammation and tissue immunity, and it proceeds to a discussion of general facts and theories of immunity. The style is simple and direct and the paragraphs are short and set off with paragraph headings for the greater convenience of the beginner. The references at the end of each chapter are particularly valuable because of the inclusion of titles of the original papers. The chapters on the chemistry of antigens, bacterial antigens and specificity, and colloids and hypersensitiveness will be of great value to beginning students, and the explanation of the current views of antigen-antibody reactions are clear and direct. The theoretical features of the book do not overshadow the practical, and chapters dealing with the commonly used serologic tests are included. Criticism of the book is of course a matter of opinion and should not overlook the main purpose of the author to present the subject primarily for beginners. Some may object to the incompleteness of the discussion of certain subjects while many pages are given to the details of others. The historical approach and the presentation of subjects with, at times, perhaps greater emphasis on the author than on the subject are occasionally disturbing. These are minor objections that do not affect the major purposes of the book to present the broad subject of infection and resistance in as simple a manner as possible without losing the larger perspective. The illustrations, color plates and author's index are valuable features. The book will be useful to teachers and students of bacteriology, immunology and pathology, who have been handicapped in the elementary study of infection and resistance because of the lack of a textbook adapted to the beginner.

**Multiple Sklerose und Tuberkulose.** Von Prof. Dr. med. et phil. Heinrich Gerhardt, Chefarzt des St. Josef Hospitals in Bielefeld. Tuberkulose Bibliothek. Beihefte zur Zeitschrift für Tuberkulose Nr. 58. Herausgegeben von Dr. Franz Redeker, Oberregierungs- und Medizinrat Berlin und Dr. Karl Diehl, dirigierender Arzt Sommerfeld. Paper. Price 4.80 marks. Pp. 48. Leipzig: Johann Ambrosius Barth, 1935.

This monograph discusses the possible relationship of tuberculosis to multiple sclerosis and is divided into twelve parts: inflammatory processes in multiple sclerosis, the spinal fluid changes in multiple sclerosis, syphilis and multiple sclerosis, the similarities between syphilitic and tuberculous processes, tuberculosis in a nonspecific form, tuberculosis of the nervous system, multiple sclerosis in tuberculosis, research in multiple sclerosis, direct demonstration of tuberculosis in the blood in multiple sclerosis, the complement reaction in the blood in multiple sclerosis, specific tuberculosis test in the cerebrospinal fluid in multiple sclerosis, and demonstration of tubercle bacilli in the cerebrospinal fluid in multiple sclerosis. The infectious and endogenous processes are discussed in relation to the etiology of multiple sclerosis. There is an excellent bibliography.

**The Diagnosis and Treatment of Disorders of Metabolism.** By James S. McLester, M.D., Professor of Medicine at the University of Alabama, Birmingham. [Reprinting of Oxford Monograph Vol. I, The Diagnosis, etc.] Cloth. Price \$5. Pp. 328 with 6 illustrations. New York: Oxford University Press, 1935.

This monograph, although recopyrighted in 1935, apparently is a reprint of the first volume of the Oxford Monographs on Diagnosis and Treatment, 1928, revised to 1931. That is to say, the bibliography contains few recent references, none later than 1931, and the text, so far as can be judged, was written before 1930. It was a good book in 1930, it still is a useful work, but it is not up to date. Water runs rapidly under the bridge of metabolism. Books of metabolism for the most part are antiquated when they first appear, as is true of medical monographs in general, and why a book four years old or older should be offered now, with a new 1935 copyright, particularly a book published by the Oxford Press, is not apparent.

**Les acquisitions nouvelles de l'endocrinologie.** Par R. Riviere. Second edition. Paper. Price 30 francs. Pp. 305. Paris: Masson & Cie, 1935.

This is a brief, clear and, on the whole, accurate summary of the present status of the normal and pathologic physiology of the hypophysis, thyroids, parathyroids, adrenals, ovaries and testes. The monograph could have been more useful both to doctors and to biologists if references to the most significant literature, especially on phases much in controversy, had been included. Despite this omission, the monograph constitutes a good introduction to the field.

**Folk Lore from Adams County, Illinois.** By Harry Middleton Hyatt, M.A., D.D., Director of the Alma Egan Hyatt Foundation. Cloth. Price \$8. Pp. 723. New York: Alma Egan Hyatt Foundation, 1935.

It is a remarkable thing to find a Master of Arts from Oxford who is also a Doctor of Divinity printing, under the auspices of an important foundation, a record of the folk lore of a small county in Illinois. In a brief preface the author explains the nature of the population of the county and the method of development of the material. Then the folk lore is listed under various headings, each item numbered so that there are found to be a total of 10,949 items. They include riddles, stories, superstitious beliefs, sports, sex lore and similar subjects. One finds here repeated much of the folk-lore of the European nation from which these people came. The volume is an invaluable source book for all who are interested in superstition and ethnology.

**A Textbook of General Bacteriology.** By Edwin O. Jordan, Ph.D., Professor of Bacteriology in the University of Chicago and in Rush Medical College. Eleventh edition. Cloth. Price \$6. Pp. 825 with 202 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

This volume is now in its eleventh edition. The type has been entirely reset in order to include in the book the torrent of investigations that have been made since the last previous edition in 1931. New topics concern particularly bacterial variation, immunity, the staphylococci, Brucella, Rickettsia, spirochetes and viruses and virus diseases. In his nomenclature Professor Jordan follows well established usage. Thus a reliable, standard work continues to maintain the high place it achieved promptly with its first appearance.

## Medicolegal

**Workmen's Compensation Acts Aggravation of Pre-existing Buerger's Disease**—The plaintiff during the course of his employment suffered a traumatic injury to his foot, over the dorsalis pedis artery. An open sore developed at the site of his injury, which healed leaving a scar. Subsequently infection set in, gangrene developed and, twenty months after the original injury, amputation of the foot became necessary. Thereupon the plaintiff sued the defendants, his employers, under the federal employer's liability act, contending that the injury, by aggravating a preexisting Buerger's disease, caused the gangrene which necessitated the operation. The defendants contended that an infection, which could not be checked because of the Buerger's disease, caused the gangrene. The trial court gave judgment for the plaintiff, and the defendants appealed to the Supreme Court of Oregon.

On appeal, the principal issue raised involved the validity of certain hypothetical questions propounded to the plaintiff's medical witnesses. The Supreme Court, however, could find nothing in the hypothetical questions asked to warrant interference with the judgment of the trial court. The opinion of an expert witness, the court said, may properly be based on both a hypothetical state of facts and also on facts of which the witness has knowledge, if he has previously detailed those facts to the jury. Furthermore, it is not necessary to include every detail in a hypothetical question. Matters relating to hypothetical questions are generally within the discretion of the trial court, and if the adverse party wishes additional facts laid before the witness, he may do so on cross-examination. A party has the right to lay before the jury by hypothetical questions scientific inferences properly deductible from the facts claimed to be proved according to his version of the case. It is always permissible for an expert in answering hypothetical questions to use information he has gained from a physical examination where such information has already been testified to the jury.

Finding no reversible error in the record, the Supreme Court affirmed the judgment of the trial court—*Cobb v Spokane P & S Ry Co (Ore)* 44 P (2d) 731.

**Malpractice Impairment of Vision Attributed to Operation for Cataracts**—The defendant, a physician operated on the plaintiff for cataracts. Prior to the operation, the plaintiff had a "substantial amount of vision", after the operation, the plaintiff became "nearly blind." He sued the physician for damages for his loss of vision. The trial court gave judgment for the physician and the plaintiff appealed to the Supreme Judicial Court of Massachusetts.

The only question raised on appeal was the correctness of an instruction given by the trial court whereby the jury was told that the plaintiff had the burden of proving that his impairment of vision "was the result of the doctor's neglect alone, and of nothing else." Ordinarily, said the Supreme Judicial Court, in an action based on negligence, such an instruction would be both inadequate and incorrect. Liability in such cases is founded on proximate cause, which is not necessarily the sole cause. A careful examination of the record in the present case, however, led the court to the conclusion that the instruction given could not have been misapplied by the jury and did not constitute error. The evidence suggested three possible causes for the plaintiff's condition: (1) The condition may have been wholly or partly the natural development and outgrowth of the condition of the plaintiff's eyes at the time when he first consulted the defendant, (2) it may have been due wholly or partly to the contributory negligence of the plaintiff after he consulted the defendant or (3) it may have been due wholly or partly to the negligence of the defendant. The plaintiff was not entitled to recover for any of the unavoidable consequences of his original ailments but was entitled to recover only for such additional suffering and impairment of vision as came about from a breach of duty by the defendant. This phase of the case was covered by correct instructions and the causal effect of the plaintiff's original condition was dealt with fully in other parts of the charge. When

continued the court, the trial judge referred to the necessity that the defendant's negligence must be the sole cause of the injury the jury could not have understood that there could be no recovery if the plaintiff's original disease still contributed to his present condition. The jury must have understood that in using this language the judge had in mind the only remaining possible cause other than negligence of the defendant, namely, contributory negligence of the plaintiff. It was correct to instruct the jury that, as between negligence of the defendant and contributory negligence of the plaintiff, there could be no recovery unless negligence of the defendant was the sole cause. The exceptions raised by the plaintiff to the instructions were overruled—*Dellapenna v Irwin (Mass)*, 196 N E 839.

**Pharmacists Liability for Error in Filling Illegible Prescription**—The plaintiff's physician, attending her for the delivery of her first child, wrote a prescription for 1 drachm of the fluidextract of ergot, with instructions for the patient to take it at once after her child was born. Her husband took this prescription to the drug store of the defendants. The defendants' prescription clerk told him to leave it and to come back later. When the husband returned he was given a bottle containing 8 drachms of the medicine that had been prescribed, labeled "One [1/2] teaspoonful at nite." The plaintiff's husband and mother had understood from the attending physician that the entire amount prescribed was to be administered at once, so the mother started to carry out what she believed to be the physician's orders. Two dessert spoonful doses had been taken by the patient, but when an attempt was made to administer the third dose she seemed to pass into convulsions and was apparently unconscious for some time. She suffered "terrible pains in the lower part of her abdomen and had a 'terrible knot' in her stomach." She gradually convalesced, but she had two miscarriages and at the time of the trial, nearly two years after the birth of her child and the administration of the ergot, she was still in ill health. She sued the proprietors of the pharmacy. From a judgment in her favor, the defendants appealed to the Kansas City court of appeals, Missouri.

In the course of the trial, the physician's prescription was introduced in evidence. As printed in the record it read, omitting the formal part "F E ergot Z Sig Take at once" the letter Z being printed where the sign S ordinarily would appear in a prescription calling for a drachm. The defendants' clerk testified that he could not make out the directions or the quantity called for by the prescription and tried unsuccessfully to communicate with the physician by telephone. One of the defendants testified that he read the prescription as calling for 1 drachm of fluidextract of ergot but that he could not read the directions. He called the prescribing physician by telephone and some one who said he was the physician replied. According to the testimony of this defendant, he told the physician that he had never before seen a prescription for 1 drachm of the fluidextract of ergot and asked if he did not want 1 ounce. The physician replied, according to the testimony of this defendant, that he wanted 1 ounce and said, in response to the defendants' inquiry, that the prescription should be labeled, "Take one-half teaspoonful at night," explaining that if he wanted the patient to have more he would give instructions later. The defendant thereupon, according to his testimony wrote a prescription, subsequently offered in evidence, reading omitting the formal parts, according to the record "F E ergot f3 One (1/2) teaspoonful at night." To this prescription the defendant appended "Bradford M D" whereas the prescribing physician's name was Radford, and added "As per conversation with Dr S." Dr Radford flatly denied that he had talked over the telephone and denied that he had authorized any change in the prescription. The defendant pharmacist who filled the prescription and who wrote the directions on the bottle could not himself tell what those directions meant.

The defendants sought to escape liability on the ground that the plaintiff had been guilty of contributory negligence. Presumably said the appellate court, this was on the theory that she was bound by whatever negligence the agents, her mother and her husband, were guilty of in administering the medicine.



to her. But the prescription filled was not the prescription the doctor gave and of which he told the mother when he gave it. The mother had the right to assume that the prescription filled and handed to her to administer was the same as the one the doctor gave. The danger lay in giving the medicine as prepared at the drug store after the alleged talk with the prescribing physician over the telephone—which, if done, the druggist had no right to do—and of this the mother knew nothing.

The appellate court could find no reversible error in the judgment in favor of the plaintiff, which therefore was affirmed. —*Johnson v Smolinsky (Mo)* 81 S W (2d) 434

**Eugenic Sterilization and Due Process of Law**—The legislature of Alabama passed a bill proposing to authorize the eugenic sterilization, according to its title, 'of particular types of mental disease, insane, epileptic, mentally deficient, criminal and delinquent persons in the state of Alabama.' The bill came before the governor for his approval or veto. Acting under section 10290, Alabama Code, 1923, as amended, the governor submitted the bill to the Supreme Court of Alabama for opinion as to its constitutionality.

The state, said the court, may under its police power provide for the eugenic sterilization of the several classes of persons specified in the bill, when the proper method is prescribed for the ascertainment or adjudication of their status. When that status is legally ascertained, sterilization will not constitute such cruel and unjust punishment as is prohibited by the constitution. But said the court, the bill under review violates not only the fourteenth amendment of the federal constitution but also section 13 of the state constitution. Due process of law within the meaning of the constitution, requires a hearing after notice before a duly constituted tribunal or board, with a right of appeal to a court for judicial review from the finding of the board or commission judging a person a fit subject for sterilization. This right, in the opinion of the court, the bill under consideration denied, or did not preserve. The proposed law was therefore declared to be unconstitutional. —*In re Opinion of the Justices (Ala)*, 162 So 123

**Malpractice Unauthorized Operation as Assault and Battery, Blindness Following Tonsillectomy and Contusion of Head**—The plaintiff, a 9½ year old boy, was sent to the Shurly Hospital by the city physician, to whom he had been taken by a visiting nurse, with a memorandum requesting the removal of the boy's tonsils and adenoids. On September 24 his tonsils were removed by one of the defendants. The boy was accompanied to the hospital by his 15 year old brother. His parents had repeatedly indicated that they did not want his tonsils removed, but whether their objections were known to the visiting nurse who took him to the city physician or to the medical staff at Shurly Hospital does not appear in the record. No one obtained the consent of the parents. Apparently they did not know that their son was in the hospital until after the operation had been performed, and then the brother who had accompanied the patient to the hospital told them of it. On the morning after the operation, the plaintiff's father, when he returned to the hospital, saw blood on the floor near his son's bed and on his son's face, and there was a "bump" on the boy's forehead, between the eyes. This, the son said, resulted from a fall that occurred when he, becoming frightened during the night because of bleeding from his throat and the failure of the nurse to respond to his cries, attempted to get out of bed and struck his head. On the second day after the operation, the patient was taken home. He was slow in regaining his strength and suffered from headaches, but apparently he did not require medical attention.

On the morning of October 2 or October 10—the date was in dispute—it was discovered that the boy had become blind. He was immediately taken again to the Shurly Hospital. After a period of observation and many consultations, it was agreed that in event of continued blindness a subtemporal decompression should be done to remove the intracranial pressure, which was thought to be the cause of the blindness. The boy's father refused to consent to the operation and the boy had remained completely blind up to the time of the trial. The headaches

had disappeared, however, and aside from the blindness there was no evidence of any impairment of any bodily function. The boy, being a minor, sued through his next friend, the physician who performed the tonsillectomy, and certain other persons identified with it, alleging that the unauthorized operation constituted an assault and battery and that his blindness was the result of that operation and should be considered in assessing damages. The trial court found that the operation was unlawful and that the defendants had committed an assault and battery. It held, however, that no causal relationship had been shown between the operation and the plaintiff's blindness. From a judgment in favor of the plaintiff, for \$600, both parties appealed to the Supreme Court of Michigan.

Except in very extreme cases, said the Supreme Court, a physician has no legal right to operate on a child without the consent of its parents or guardian. In the present case there was no emergency. Furthermore, the parents had repeatedly indicated that they did not want their son's tonsils removed, and neither of them accompanied their son to the hospital or was present at the time of the operation. Under such circumstances, said the court, consent of the parents could hardly be implied.

The defendants propounded to the Supreme Court the following question:

Where a city physician without first obtaining the parents' consent, issues a formal order to a private hospital to operate and the operation is performed in reliance upon that order and without any knowledge upon the part of the hospital authorities or the operating surgeon of such lack of consent may the latter properly assume that the city physician had obtained the necessary consent before issuing the order for the operation?

The trial court was of the opinion that if the defendants chose to assume that the parents' consent had been given to the city physician, they adopted that assumption at their own risk, and if their assumption turned out to be erroneous, it afforded them no protection. Giving all due weight to the memorandum from the city physician, said the Supreme Court, and in view of the plaintiff's age and of the absence of his parents at the time he came to the hospital and at the time of the operation, consent to the operation could not be implied.

Ten hypotheses were discussed by witnesses as they considered the possible causative relation of the tonsillectomy and the contusion of the forehead to the plaintiff's blindness. All medical witnesses agreed in ruling out seven of them and they could not agree as to the remaining three. The Supreme Court found itself unable to disagree with the finding of the trial judge.

The burden in this case as in all cases is upon the plaintiff to establish what he claims by a preponderance of the evidence. In the face of proof that in many thousands of cases this result (blindness) has not followed, can it be said that the result is probable? Only in the most remote degree can it be said to be even possible.

The judgment of the trial court, awarding the plaintiff \$600 damages on account of the assault that was committed when the operation was performed without consent, was affirmed. —*Zoski v Gaines (Mich)*, 260 N W 99

## Society Proceedings

### COMING MEETINGS

American Academy of Orthopaedic Surgeons St. Louis Jan. 13-16. Dr. Philip Lewin, 104 South Michigan Boulevard, Chicago, Secretary.  
American College of Physicians Detroit Mar. 2-6. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.  
American Orthopsychiatric Association Cleveland Feb. 20-22. Dr. George S. Stevenson, 50 West 50th Street, New York, Secretary.  
Annual Congress on Medical Education, Medical Licensure and Hospitals Chicago Feb. 17-18. Dr. W. D. Cutler, 535 North Dearborn Street, Chicago, Secretary.  
Mid-Western Section American Laryngological, Rhinological and Otolaryngological Society St. Louis Jan. 15. Dr. Harry W. Lyman, Carleton Building, St. Louis, Chairman.  
Society of Surgeons of New Jersey Jersey City Jan. 15. Dr. Walter B. Mount, 21 Plymouth St., Montclair, Secretary.  
Southern Section American Laryngological, Rhinological and Otolaryngological Society Jackson Miss Jan. 18. Dr. Robin Harris, Lamar Building, Jackson, Miss, Chairman.  
Western Section American Laryngological, Rhinological and Otolaryngological Society Del Monte, Calif. Feb. 12. Dr. Carroll Smith, Paulsen Building, Spokane, Wash., Chairman.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Clinical Pathology, Baltimore

5 455 602 (Nov.) 1935

- Nature of Heterophilic Antibodies in Infectious Mononucleosis I. L. Davidsohn and Phoebe H. Walker Chicago—p 455  
Toxicology in Children A. O. Gettler and A. V. St. George New York—p 466  
Clinical Pathology of Rheumatoid Arthritis J. W. Gray, W. G. Bernhard and C. H. Gowen Newark, N. J.—p 489  
Cholesteroluria in Bright's Disease Chemical Study M. Bruger, New York—p 504  
\*Plasma Cholesterol Concentration in Glomerulonephritis and Other Terminal States A. Cantarow and S. G. McCool Philadelphia—p 516  
Hyperprotenemia, Autohemagglutination and Renal Insufficiency in Multiple Myeloma A. G. Foord, Pasadena Calif. and Lillian Randall Los Angeles—p 532  
Concerning Anticoagulants T. B. Magath and Margaret Hurn Rochester, Minn.—p 548

**Plasma Cholesterol Concentration in Glomerulonephritis**—Cantarow and McCool determined the plasma cholesterol concentration in eighteen patients (fourteen of whom died) with advanced chronic glomerulonephritis, thirty-two with non-nephritic nitrogen retention (twenty-six of whom died) and eighteen dying of conditions not accompanied by nitrogen retention. Although there was a distinct tendency toward fixation of the cholesterol concentration at a low level with increasing grades of nitrogen retention in both the nephritic and the non-nephritic groups, there was no constant quantitative relationship between the degree of cholesteroluria and of nitrogen retention. Low values were usually obtained in the group of terminal states not associated with nitrogen retention. No constant relationship was noted between the degree of hypocholesterolemia and of anemia. The fact that similar changes are obtained in a variety of terminal states suggests that the development of hypocholesterolemia and its serious prognostic significance under such circumstances are probably related to the operation of some fundamental mechanism which is stimulated by a variety of pathologic states. Certain observations are reported which suggest that excessive withdrawal of cholesterol from the blood as a result of abnormal stimulation of the activity of the reticulo-endothelial system may be of importance in the pathogenesis of this phenomenon.

#### American Journal of Hygiene, Baltimore

22: 495 746 (Nov.) 1935

- Immunization Against Diphtheria Experiments in Hungary with Single Dose of Precipitated Toxin F. Faragó Budapest Hungary—p 495  
Malaria Studies in Greece Relation of Housing to Malaria in Certain Villages of East Macedonia M. A. Barber and J. B. Rice—p 512  
Organization of an Outpatient Tuberculosis Clinic for Epidemiologic Investigation E. L. Opie and F. M. McPhedran Philadelphia—p 539  
Spread of Tuberculosis in Families F. M. McPhedran and E. L. Opie Philadelphia—p 565  
Fate of Persons in Contact with Tuberculosis Exogenous Infection of Children and Adults E. L. Opie, F. M. McPhedran and Persis Putnam Philadelphia—p 644  
Tapeworm Studies II Persistence of Pasture Stage of Moniezia expansa N. R. Stoll Princeton, N. J.—p 683  
Study of Diets in Two Rural Communities in Tennessee in Which Amebiasis Was Prevalent F. D. Alexander and H. E. Meloney Nashville Tenn.—p 704  
\*Study of Risk of Attack Among Contacts in Tuberculous Families in Rural Area J. Downes New York—p 731

**Contacts in Tuberculous Families in Rural Area**—Downes studied the risk of attack among contacts in tuberculous families in rural Cattaraugus County, N. Y., in a special investigation of a sample of eighty-three families in which the primary case was one of active pulmonary tuberculosis. The annual incidence of secondary cases in the ten years following

familial exposure to tuberculosis indicated a concentration of cases within the first two years after exposure and a definite continuation of incidence throughout the period. There was no evidence that the saturation point of the population with respect to the occurrence of secondary cases had been reached in the ten years after exposure to infection. The secondary attack rate was found to be 11 per hundred person years. This rate compared with the average annual incidence of active tuberculosis for the total population of Cattaraugus County shows that the risk of contracting serious tuberculosis was thirteen times greater for family contacts than for the general population. The risk was even greater for persons less than 20 years of age exposed to contagion in the family. The incidence of secondary cases by age showed that the age selectivity of tuberculosis, as evidenced by mortality and morbidity from the disease by age in the general population, is striking even when the factor of exposure is held relatively constant, as in the eighty-three families. Analysis of the secondary cases occurring at each age period according to age at which exposure to infection took place showed that there was a delay in the development of active tuberculosis among children exposed at ages of from 5 to 9 and from 10 to 14 years. Children exposed at these ages contributed to tuberculosis morbidity when they reached late adolescence and early adult life.

#### American Journal of Medical Sciences, Philadelphia

190: 583 726 (Nov.) 1935

- Inflammation and Bacterial Invasiveness V. Menken Boston—p 583  
\*Variations in Gastric Mucosa in Pernicious Anemia Gastroscopic, Surgical and Roentgenologic Observations C. M. Jones, E. B. Benedict and A. O. Hampton Boston—p 596  
Distribution of Erythrocyte Population in Regard to Diameters and Osmotic Resistance in Splenectomized Cases of Hemolytic Icterus Contribution to an Understanding of Pathogenesis of Disease G. Morigliano-Levi and A. Bairati Turin Italy—p 610  
Biopsy of Sternal Bone Marrow Its Value in Study of Diseases of Blood Forming Organs W. Dameshek, Boston—p 617  
\*Systematic Variation in Human Menstrual Interval O. W. Richards New Haven Conn.—p 641  
Daily Requirement in Human Hypothyroidism of Purified Human Thyroid Hormone at Various Metabolic Levels Comparison Between Spontaneous Myxedema and Cachexia Strumipriva E. C. Eppinger and W. T. Salter Boston—p 649  
Studies of Gallbladder Function VII Composition of White Bile Cecilia Riegel, I. S. Ravdin, C. G. Johnston and P. J. Morrison Philadelphia—p 655  
Distribution and Prognosis of Pulmonary Lesions Associated Tuberculous and Nontuberculous F. M. McPhedran Philadelphia—p 659  
Electrocardiographic Changes During Encephalography (Twenty Cases) M. M. Abeles and D. E. Schneider New York—p 673  
\*Further Studies in Calcium and Parathyroid Therapy in Chronic Ulcerative Colitis B. Haskell and A. Cantarow Philadelphia—p 676  
Diabetic Coma with Extreme Hyperglycemia E. S. Dillon and W. W. Dyer Philadelphia—p 683  
Metabolism of Galactose III Influence of Disturbed Endocrine Function A. W. Rowe Boston—p 686  
Id. VII Influence of Tolerance of Coexisting Endocrinopathies A. W. Rowe Boston—p 701

**The Gastric Mucosa in Pernicious Anemia**—Jones and his associates discuss five cases of pernicious anemia with especial reference to the appearance of the stomach before and after successful treatment of the disease. Observations of the stomach were made by gastroscopic and roentgenologic examination by direct observation at laparotomy and by histologic examination of biopsy material. Evidence is presented which the authors believe indicates that atrophy of the stomach occurs particularly during a relapse and not as an invariable accompaniment of the disease. Evidences of hypertrophic gastritis have been observed roentgenologically during a relapse and also during the early stages of a remission. Following specific therapy of the pernicious anemia evidences of atrophy and hypertrophy of the stomach have both tended to disappear. The authors suggest that the change from an appearance of atrophy to that of a normal gastric mucosa frequently represents an epithelial change associated with successful treatment of a specific deficiency state rather than the healing of a chronic inflammatory process. They believe that the apparent return to normal from a grossly hypertrophic condition of the gastric mucous membrane represents a subsidence of a chronic gastritis.

**Variation in Menstrual Interval**—Richards gives an analysis of the variation in the menstrual interval of two persons one of whom kept calendars for nine years and the other a fairly complete diary for twelve years. In addition to these

long records the length of the interval, its variation, the age of the subject and the length of the record is given for two unreported subjects and for nine of the subjects from King (1926). Some of the women showed a variation nearly five times greater than others within this small group. From the experience of this group of women a variation of from one to five days may be expected, and variations of from two to ten days, depending on the variation of the individual case, indicate a definite departure from the normal variation. A variation of about one day in the mean intervals between two women is statistically significant and shows that there are marked individual differences in the menstrual rhythm. A systematic variation was found in the long records of two of the subjects. One menstruated less frequently in summer and more frequently in the late fall of the year. This systematic variation was followed more closely after interruption by pregnancy. The other subject menstruated more frequently in late spring and less frequently in late fall. The necessary formulas of this kind of analysis are given. Further comparison of the results will have to await the publication of more data for analysis. A knowledge of the individual variations in the menstrual rhythm will be of use to the clinician and will aid the study of the control of the female sexual cycle by the endocrine glands.

**Calcium and Parathyroid Therapy in Chronic Ulcerative Colitis**—Haskell and Cantarow observed nine patients with chronic ulcerative colitis for periods of from two to six years after their original course of calcium and parathyroid therapy. Five have remained essentially symptom free, brief remissions occurred in two instances, which, however, responded promptly to the same form of treatment. One patient with nephritis and anemia is unimproved and one died of pneumonia after remaining well for three years. Sixteen additional cases have been treated similarly and have been observed for periods of from six months to four years. Eight became clinically well, seven were relieved of their severe symptoms and were restored to fairly normal health, with some evidence of persisting colonic irritability, and one patient was not benefited. Although the response to treatment is usually prompt, definite improvement occurred in three cases only after three months of continuous calcium and parathyroid administration. Cessation of bleeding is the earliest and most constant indication of improvement in the majority of cases. The rationale of calcium therapy in chronic ulcerative colitis is believed to rest on the favorable influence of calcium on the following existing conditions: nutritional change in the tissues, with or without a disturbance of calcium partition, spasticity and hyperirritability of the colon, and slow, capillary bleeding. It is impossible for the authors to state whether healing of the ulcerated areas is predominantly the cause or the effect of the diminished irritability and bleeding. It may be, as suggested in their first report, that calcium favors the healing process directly, by improving the nutrition of the inflamed and edematous intestinal wall.

### American Journal of Psychiatry, New York

92 259 508 (Sept.) 1935

- The Drama of a Great Medical Library E E Hume Washington D C—p 259
- The Material of Human Nature and Conduct Introduction A Meyer Baltimore—p 271
- Id The Material as Dealt with by the Psychologist W R Miles New Haven Conn—p 275
- Id The Material as It Organizes Itself with the Psychopathologist and Psychotherapist W Malamud Iowa City—p 285
- Id The Material as It Organizes Itself with the Psychoanalyst S Rado New York—p 297
- Id The Material Dealt with by the Neurophysiologist in the Study of Personality S Cohn Boston—p 301
- Id The Material in the Hands of the Biochemist J C Whitehorn Waverley Mass—p 315
- Id Anatomopathologic Data on Personality Function Lauretta Bender New York—p 325
- Glosses of Occipital Lobes in the Chorea C Davison New York—p 361
- Psychoses with Pernicious Anemia K M Bowman Boston—p 371
- The Problem of Research in Mental Hospitals J Kasanin Howard R I—p 397
- \*Prevention of Loss of Weight in the Psychoses I Finkelman, Elgin Ill—p 407

**Prevention of Loss of Weight in the Psychoses**—Finkelman gave twelve patients with an acute psychosis, the greater number of whom were in the acute stage of dementia

praecox, a hydrating solution to prevent the loss of weight. All the patients were emaciated and dehydrated. Eight patients with a similar mental and physical condition were used as controls. The hydrating solution developed by Kugelmass for the prevention of loss of weight in the new born was used and consists of 6 per cent gelatin, 3 per cent dextrose and 0.5 per cent sodium chloride. It was not used as a source of calories but for the purpose of serving as a hydrator of tissues. The patients were given 18 ounces (540 cc.) of the solution daily with meals. All the treated patients gained weight except a patient with involutional melancholia. Four of the patients with catatonic dementia praecox had a remission. The improved physical condition may have hastened the mental improvement. To determine whether this is a rational treatment, the scope of the investigation should be extended to include determinations of fluid intake and output, blood sugar and sugar tolerance curves and acid-base equilibrium.

### American Journal of Surgery, New York

30: 205 396 (Nov.) 1935

- The Jaundiced Patient I Cohn New Orleans—p 266
- Complete Anuria in Perforated Gastric Lesions Report of Two Cases A D Segal and J S Read Brooklyn—p 276
- Spinal Anesthesia J J Stein and R M Tovell Rochester Minn.—p 282
- Plastic Operation for Repair of Retracted and Stenosed Colostomies R R Best and N F Hicken Omaha—p 287
- \*Pyopneumothorax Occurring as Complication of Acute Pulmonary Suppuration C B Wood St. Clare Mich—p 289
- Benign Fibrous Tumors of Male Breast T de Cholsnoky New York—p 298
- Medical Care of Surgical Diabetic K Eisenbud New York—p 308
- Use of Dilaudid in Gynecology Preliminary Report G L Moench New York—p 310
- \*Trichomonas Vaginalis Vaginitis Treatment with Iodochlorhydrat quinoline J W Huffman Tucson Ariz—p 312
- Congenital Absence of Vagina Simplified Operation with Report of One Case A E Kanter Chicago—p 314
- Practical Applications of Recent Contributions to Physiology of Upper Urinary Tract W P Herbst Washington D C—p 317
- Traction Dressings for Fractured Clavicle and Metacarpus V Carilla New York—p 323

**Pyopneumothorax Complicating Acute Pulmonary Suppuration**—Wood points out that nontuberculous pyopneumothorax occurs most frequently as a complication of a pulmonary abscess. The presence of such an abscess may remain obscure until several days following surgical drainage of the empyema, but its presence may be safely prophesied at the onset of the pyopneumothorax. Tuberculosis in unselected cases with general suppuration is rarely the etiologic factor. The rupture of such an abscess into the pleural space usually occurs during its acute stage, while active destruction of pulmonary tissue is still going on. Thus such patients, nearly always at the point of death, are overwhelmed with infection and sepsis and mechanical interference with respiration. Only immediate surgical intervention can offer hope for life. Other cases no doubt occur following diagnostic procedures of the chest. Aspiration of the chest in the presence of virulent infection within the lung itself carries with it the danger of producing a pyopneumothorax. Similarly, artificial pneumothorax as a method of treatment for chronic pulmonary abscess may rupture the abscess into the pleural space and so produce pyopneumothorax. The diagnosis of this condition is frequently impossible or inconclusive by physical examination. Roentgenograms offer the most satisfactory evidence, although the aspiration of pus and abundant gas from the pleural space proves that the abscess has ruptured into the pleura. The clinician may strongly suspect the presence of such a lesion when a patient with a severe pneumonitis rapidly develops increased respiratory difficulty, pleuritic pain and a shift of the mediastinum to the good side. Closed drainage with a large catheter and slight negative pressure offers the safest immediate treatment. The catheter should never become blocked. This should be followed in about a week's time by an open thoracotomy. Many patients who have had pulmonary suppuration for a moderate length of time can tolerate initial open thoracotomy and such cases probably convalesce more satisfactorily. The bronchopleural fistulas close rapidly without the aid of special therapy. Death occurred in ten of the author's eighteen patients. At least seven of the deaths were the direct result of the severity of the pneumonitis and of complications arising not from the

pyopneumothorax but from the pulmonary abscess and infection. An abscess that has ruptured into the pleura, if the patient survives the immediate postoperative period, practically always heals itself. With good care such patients may expect a future of normal activity.

**Trichomonas Vaginalis Vaginitis**—Huffman used iodochlorhydroxyquinoline in the treatment of fourteen cases of *Trichomonas vaginalis* vaginitis in which more than one type of previous treatment had given no benefit or the infection recurred. One half ounce of a 6½ per cent suspension of iodochlorhydroxyquinoline was instilled in the vagina followed by double tampons to retain the material. The tampons were removed in twenty-four hours and a warm water douche was taken. Treatments were given on alternate days. The average number of treatments was six, requiring about two weeks. Of fourteen patients, five have had no recurrences for five months, six have had no recurrences for four months, two have had no recurrences for three months, and one has had no recurrence for two months. One-half ounce of this suspension equals the average daily dose by mouth for intestinal infections. Lesser concentrations have not been tried. There have been no toxic or irritative manifestations. Criteria of cure were disappearance of the organism from the discharge, disappearance of the discharge itself and absence of vaginitis or its symptoms.

### Annals of Internal Medicine, Lancaster, Pa

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Mechanisms of Healing in Collapse Therapy M Pinner Tucson Ariz —p 501

\*Lymphedema of Extremities Etiology Classification and Treatment Report of Three Hundred Cases E V Allen and R K Ghormley Rochester Minn —p 516

Experimental and Pathologic Aspects of Silicosis D Irwin Toronto —p 540

Accessory Sinus Infection Its Relation to Mastoid and Lung Infections W F Manges Philadelphia —p 547

Basic Points in Roentgen Ray Studies of Lung Anatomy and Pathology K Dunham and J H Skavlem Cincinnati —p 555

Cardiac Output in Common Clinical Conditions and Diagnosis of Myocardial Insufficiency by Cardiac Output Methods I Starr Jr and C J Gamble Philadelphia —p 569

\*Studies on Increased Metabolism in Hyperthyroidism E C Andrus and D McEachern Baltimore —p 579

\*Studies Relating Vitamin C Deficiency to Rheumatic Fever and Rheumatoid Arthritis Experimental Clinical and General Considerations I Rheumatic Fever J F Rinehart San Francisco —p 586

Nontraumatic Chylothorax and Chylopericardium Review and Report of Case Due to Carcinomatous Thrombo-Angitis Obliterans of Thoracic Duct and Upper Great Veins W M Yater Washington D C —p 600

Alterations in Hepatic Function Produced by Experimental Hepatic Lesions J L Bollman and F C Mann Rochester Minn —p 617

**Lymphedema of Extremities**—Allen and Ghormley present data from the records of 300 cases observed at the Mayo Clinic in ten years. They describe lymphedema, offer a clinical classification and discuss the etiology, diagnosis and treatment. Medical treatment to be of value, must be carried out early. There is no medical treatment of value when the limb is greatly hypertrophied from the overgrowth of connective tissue. The rationale of attempting to control edema is based on a conception of the condition within the tissues. A close parallelism exists with the condition present in varicose veins. The problem is one of causing the lymph to move toward the body by preventing stasis. The authors know of no way to accomplish this medically, other than by compressing the limb by adequate bandaging. An important first step is elevation of the extremity until as much as possible of the lymph has been removed from the extremity. Cloth bandages are of little or no value. They use a pure rubber roller bandage, 3 inches wide and 15 feet long. In the treatment and prevention of inflammation almost the entire problem as far as infection is concerned is the prevention of attacks of acute lymphangitis. The periodic injection of a therapeutic amount of streptococcus antiserum every few weeks may be of value. When attacks of acute inflammation recur trichophytosis should always be suspected and treated, if present. The necessity of surgical treatment of lymphedema is a frank admission of failure of medical treatment in those instances in which the best medical treatment has been carried out. One should not operate during an attack of

cellulitis. The immediate preoperative care of the patient should consist of rest in bed for a few days, with the affected limb elevated continuously to reduce the edema. The procedure used at the authors' clinic is that which was described originally by Kondoleon and modified by Sistrunk. The actual operation should be carried out under spinal anesthesia, a tourniquet being applied as high as possible on the affected limb and usually without the customary towel beneath it. Adequate bandaging is necessary for an indefinite period after operation. It is customary to wait from three to six months between operations. That is to say, one side of an extremity is treated and allowed to heal before operation is performed on the other side. Occasionally, patients get enough improvement from the operation on one side to justify omitting the second stage. Recurrent infection, such as cellulitis and lymphangitis, which had been present in twenty-five instances preoperatively, was worse after operation than it had been before in six cases, was improved in nine cases and had disappeared in eleven instances as a result of the operation. There is considerable doubt that the benefit which follows results from anastomosis of the superficial and the deep lymphatics, if, indeed, this actually occurs. Since the obstruction in many instances appears to be in the lymphatic vessels within the pelvis, little or no benefit would follow the shunting of lymph flow into the deep vessels in the leg, as these are continuous with the obstructed lymph vessels. The operation removes large valveless lymph spaces and hypertrophied connective tissue. Perhaps the most satisfactory procedure will be found to be a combination of the plastic operation of Kondoleon and one designed to carry the lymph around the area of obstruction, such as anastomosis of the lymphatic vessels of the extremity with those of the trunk. Such a procedure has been described by Gillies and Fraser.

**Increased Metabolism in Hyperthyroidism**—Andrus and McEachern state that the metabolic effects of thyroxine, produced in animals, survive in the tissues after isolation from the body and in substances extractable from such tissues. Analysis of these effects indicates that the metabolism of many varieties of cells is augmented, that the activity of certain tissue enzymes is increased in the process and that these effects are not inhibited by iodine. By analogy it is suggested that the metabolic phenomena of clinical hyperthyroidism include those demonstrated in the experimental type. The beneficial effect of iodine on the clinical disease is primarily on the thyroid and only secondarily on the metabolic phenomena resulting from the excessive thyroid secretion.

**Studies Relating Vitamin C Deficiency to Rheumatic Fever**—Rinehart points out that the experimental work reported offers evidence that vitamin C deficiency in conjunction with infection may operate as an important factor in the etiology of rheumatic fever. During the last eighteen months he has studied the patients in the Children's Cardiac Clinic of the University of California Medical School, including dietary histories, assay of social environment and capillary resistance tests as well as routine clinical examination and periodic follow up. The majority of the children lie on the borderline of inadequate nutrition. Many were severely deficient in vitamin C intake particularly during the winter months. In many instances the economic status precluded adequate food. In other cases racial habits or idiosyncrasies led to a low consumption of foods containing vitamin C. Capillary resistance tests (an index of latent scurvy) revealed in general low levels particularly in cases manifesting clinical evidence of recent rheumatic activity. Many children had edematous puffy gums. After an initial survey the patients were instructed to provide generous amounts of vitamin C in the diet. The usual recommendation was to prescribe a definite daily dietary supplement of orange juice. In most cases the period of follow up has not been long enough to be conclusive. The group however, has done surprisingly well from the standpoint of weight gain, general clinical improvement and absence of recurrence. The levels of capillary strength have risen. Many have passed through acute infections of the upper respiratory tract without reactivation of the rheumatic process. Vitamin C deficiency may afford the basis for the hemorrhagic manifestations frequently observed in rheumatic fever.

## Archives of Dermatology and Syphilology, Chicago

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- \*Purpuric Pigmented Lichenoid Dermatitis H E. Michelson and C W Laymon Minneapolis—p 707
- \*Psoriasis with Bullae Report of Case O L Levin and J A. Tolmach New York—p 718
- Lipstick Dermatitis H L Baer Pittsburgh—p 726
- Reproduction of Pathologic Specimens in Dermatologic Practice by Making Wax Moulds C R Lounsbury San Diego Calif—p 735
- \*Injurious Effects of Sodium Chloride and Their Prevention E Keining and G Hopf Hamburg Germany—p 739
- Epitrochlear Adenopathy in Secondary Syphilis B B Beeson Chicago—p 746
- Nonfatal Jaundice Associated with Arsphenamine Therapy Clinico-pathologic Study of Two Cases S Sanes and J W Jordan Buffalo—p 750
- Leukonychia Totalis Report of Case J G Stuenkel, Douglaston, N Y and W D Stuenkel New York—p 761
- Rapid Method of Staining Spirochaeta Pallida in Single Sections of Tissue A A Krajian Los Angeles—p 764
- Clinical Spectroscopy Quantitative Distribution of Gold in the Body or Its Physiopathologic Retention as Reciprocal of Capillary System L E Gaul and A H Staud New York—p 768
- Id Quantitative Distribution of Silver in the Body or Its Physiopathologic Retention as Reciprocal of Capillary System L E Gaul and A H Staud New York—p 775
- Skin Diseases and the Weather F R Schmidt Chicago—p 781
- \*Use of Autogenous Fungus Extracts in Treatment of Mycotic Infections G H Robinson and R C Grauer Pittsburgh—p 787
- Value of Intradermal Injection of Serum as Diagnostic Test for Lymphogranuloma Inguinale H A Haynes Jr Ann Arbor Mich—p 795

**Purpuric Pigmented Lichenoid Dermatitis**—Michelson and Laymon state that purpuric pigmented lichenoid dermatitis is a rather definite condition morphologically. Having seen a few cases of reaction to arsphenamine that resulted in a similar eruption and at times having seen small areas in generalized nonspecific dermatosis which resembled purpuric pigmented lichenoid dermatitis, they believe that the eruption will not prove to have a specific etiology. It seems as though it were a type of reaction due to circulating novae. The individual lesions resemble the component parts of Schamberg's disease. The fragility of the blood vessels, the red blood corpuscles in the infiltrate and the gradation of color point to an eruption dependent on an irritation that affects the blood vessels and on the changes that ensue. Although one must look on Schamberg's disease as being confined to the lower part of the legs in nearly every case, one must keep in mind that Schamberg's first patient had the eruption also on the wrist. In Schamberg's disease there are rust-colored macules of varying size, occurring definitely in or under the skin and having no papular elevations, while in purpuric pigmented lichenoid dermatitis the individual lesions are bright red pinpoint puncta or minute papules, slightly elevated and often grouped in irregularly outlined plaques. The two conditions are almost similar, but there is enough difference to justify a different term for the new condition.

**Psoriasis with Bullae**—Levin and Tolmach observed a case of psoriasis in which vesicles and bullae as well as papulosquamous lesions made up the eruption. It was apparent that the vesicular and bullous elements were not coincidental but actually part of the psoriatic eruption. There were no pustular lesions. From a clinical standpoint the papulosquamous lesions of the elbows and buttocks were typically those of psoriasis. The histologic picture of the lesion of the buttock fits in readily with that of psoriasis. The question then develops as to the interpretation of the vesicular and bullous lesions. It was evident to them that they were dealing with one cutaneous disease. When the eruption cleared up, both the papular and the bullous elements disappeared at the same time and responded to the same treatment. The evolution of the bullae into circinate lesions with infiltrated and crusted borders is different from the course of the bullae seen in toxic erythema. Circinate and crusted lesions are not uncommon in psoriasis and such lesions occurring together with typical psoriatic manifestations make it logical to consider the whole picture that of psoriasis with bullae. The histologic picture of one of the bullous lesions as described by Satenstein (who studied the serial slides) is not inconsistent with the exception of the absence of leukocytes from the cavities with the histologic picture described in many reported cases of pustular psoriasis. As in pustular psoriasis, all the cultures from the various lesions were sterile.

**Injurious Effects of Sodium Chloride**—Keining and Hopf endeavored to determine whether withdrawal of sodium chloride from the diet is a material factor in pathologic cutaneous reactions. Seventy-two patients, of whom eighteen had urticaria, twenty chronic eczema, twelve acute eczema, sixteen neurodermatitis and six dyshidrotic eczema, were put on a salt-free diet for three days and then the system was flooded with 20 Gm of sodium chloride daily in four doses of 5 Gm each, given in water masked with a few drops of menthol. This was continued for several days except in instances in which there was an immediate positive reaction. Except in one case of chronic eczema the symptoms increased markedly, at any rate after the administration of sodium chloride for several days. In most cases the exacerbation was so striking that the patient experienced considerable shock and the administration of sodium chloride had to be promptly discontinued. The medication aggravated the itching in particular, until it became unbearable. Experiments designed to discover which component of sodium chloride governs the noxious action showed that it is due to the sodium. All sodium salts caused this reaction, whereas the chlorides of other metals, except lithium chloride, produced no wheals. Sodium carbonate given to a group of ten patients in a daily dosage of from 20 to 25 Gm caused considerable exacerbation of cutaneous symptoms. The results of experiments on this subject caused the authors to consider whether it is possible to compensate the observed reactions to sodium chloride by adding other salts, viz., so-called sodium antagonists, to sodium chloride. If sodium is given not by itself but equilibrated with potassium, calcium and magnesium salts, it does not exacerbate the pathologic symptoms. When the customary salt-rich diet has disturbed the cation equilibrium previously, this disturbance is corrected by administration of the equilibrated mixture of salts, resulting in the cure of those pathologic processes which were maintained by the preexistent disturbance of the mineral economy. The customary salted diet causes excessive enrichment of the sodium content at the expense of the amounts of potassium, calcium and magnesium in the body. The disturbance of the cation relation can be compensated by means of a salt-free diet, by a diet in which equilibrated salt is used or by an increased intake of potassium, calcium and magnesium salts. This regression of the excess of sodium precedes, or runs parallel to, the cure of the clinical symptoms. The alteration of the intake of mineral salts causes no direct injury to the skin but increases the responsivity to stimuli. The exclusion of pure sodium chloride and its replacement by the equilibrated mixture of salts yielded surprisingly favorable therapeutic results.

**Fungus Extracts in Treatment of Mycotic Infections**—Robinson and Grauer were successful in treating patients having mycotic infections with autogenous extracts. A stock extract may be employed with success in cases in which an autogenous extract is unobtainable. Intradermal injections of the fungus vaccine should be adjusted to the person's reaction. The authors found it advisable to begin with a skin test dose of 0.05 cc, which is injected intradermally. Subsequent injections are given at intervals of from five to seven days, provided all signs of local reaction to the preceding injection have disappeared. The amount injected is increased by 0.05 cc. each time. If a marked local reaction has occurred the succeeding dose is of the same amount as the preceding one. This is continued until no local or focal reaction occurs. Thereafter the next amount is increased by 0.05 cc. until a dose of 0.4 cc is reached. If the condition has not entirely cleared up by this time, the dose is maintained at 0.4 cc. A case of pulmonary mycotic infection was successfully treated with an autogenous vaccine. Clinical and bacteriologic cures obtained by treatment with fungus vaccine recommend it as a means of therapy for refractory dermatomycoses. For the isolation of the fungi the authors used the medium recommended by Corper for the cultivation of tubercle bacilli. Fungi grow readily on this medium, while other organisms are retarded by the dye. Agar containing 2 per cent maltose was used for studying colony formation. The extract that they used included not only the endotoxin of the vegetative forms of fungi but some particulate portions of the bodies which they believe are desirable in stimulating immunity. A pure culture of the fungus is inoculated into a tube of plain broth



and allowed to grow at room temperature for a week or ten days. The puffball or pellicle growth is removed and washed in several changes of a solution of sodium chloride. The growth is then placed in a mortar with only the solution adhering to it and ground for thirty minutes. The moist paste is then taken up in 5 cc. of a 0.5 per cent solution of phenol in an 0.85 per cent solution of sodium chloride and heated for thirty minutes at 65°C. The suspension is shaken and allowed to stand until the coarser particles have settled leaving a smooth turbid supernatant. This supernatant is added to phenolized solution of sodium chloride until a faint opalescence, about equal to a bacterial suspension containing 100,000,000 bacteria per cubic centimeter, results. It is then filled into ampules and tested for sterility. Such a preparation can be used for cutaneous tests or for desensitization. The authors used the following strains in their stock extract: *Epidermophyton niveum* from the skin, *Microsporon villosum* from the scalp, *Microsporon Audouinii* from the scalp, *Trichophyton niveum* from the feet and two unidentified strains from the scalp. In a polyvalent extract the same amount of each strain is used, and all are ground together.

### Archives of Internal Medicine, Chicago

56: 833 1066 (Nov.) 1935

- Cyclic Response of Thyroid Gland to Experimental Excitation and Depression. H. B. Friedgood. Boston—p. 833
- \*Normal Hematologic Standards. E. E. Osgood. Portland, Ore.—p. 849
- \*Role of Pressor Substances in Arterial Hypertension. R. B. Capps, E. B. Ferris, Jr., F. H. L. Taylor and Soma Weiss. Boston—p. 864
- Renal Threshold for Dextrose in Man. J. W. Sherrill and E. M. MacKay. La Jolla, Calif.—p. 877
- Effect of Low Caloric Diets and Resultant Loss in Weight on Plasma Cholesterol in the Obese. C. A. Poindexter and M. Bruger. New York—p. 884
- Effect of Certain Therapeutic Measures on Cardiac Output of Patients with Congestive Heart Failure. H. Resnik, Jr., Nashville, Tenn., B. Friedman, New York, and T. R. Harrison, Nashville, Tenn.—p. 891
- \*Effect of High Intrapleural Pressure on Blood Pressure. J. R. Head, Chicago—p. 904
- Acute Glomerulonephritis Following Pneumococcal Lobar Pneumonia. Analysis of Seven Cases. D. Seegal. New York—p. 912
- Relationship of Pellagrous Dermatitis to Sunlight. T. D. Spies. Cleveland—p. 920
- Interpretation of Abnormal Dextrose Tolerance Curves Occurring in Toxemia in Terms of Liver Function. S. Soskin, M. D. Allweiss and I. A. Mirsky. Chicago—p. 927
- Differential Diagnosis of Rubella. Use of Schilling Differential Leukocyte Count. C. M. MacBryde and C. M. Charles. St. Louis—p. 935
- \*Renal Amyloidosis. Clinical Course and Pathologic Lesions in Sixteen Cases. H. O. Altnow, Minneapolis; Charlotte C. Van Winkle, H. W. Maly and L. E. Williams. Oak Terrace, Minn.—p. 944
- Pathology of Vessels of Pulmonary Circulation. Part IV. O. Brenner, Birmingham, England—p. 976
- Syphilis. Review of Recent Literature. J. E. Moore. Baltimore—p. 1015

**Normal Hematologic Standards.**—Osgood presents the results of a series of hematologic studies including all the commonly used procedures, on more than 500 healthy persons of both sexes ranging from children to adults. The development of a uniform system of methods for the hematologic study of oxalated venous blood made this investigation possible. These methods are simple enough for routine clinical use, but they approach research methods in accuracy. Erythrocyte counts, hemoglobin values, hemoglobin coefficients and color indexes are reported for 626 persons, cell volumes, volume coefficients and volume and saturation indexes for 583, reticulocyte counts for 476, leukocyte and differential counts for 597, and sedimentation rates for 853. The ages of the subjects ranged from 4 to more than 30 years.

**Pressor Substances in Arterial Hypertension.**—Capps and his associates tested the urine and blood of all types of hypertensive patients as well as of normal subjects for pressor substances by means of Bohm's technic. Extracts were prepared from the urine of seven subjects with malignant hypertension, four with chronic nephritis and hypertension six with essential hypertension and eight normal subjects. The criteria adopted for the diagnosis of malignant hypertension included a marked elevation of both systolic and diastolic blood pressures, definite evening changes, such as hemorrhages, exudate and papilledema and a relatively short duration of symptoms. The patients with essential hypertension showed only slight renal damage and had no retinal disturbances except for arterio-

sclerotic changes. The pressor substance or substances in the urine of patients with hypertension of any type is not increased above the normal. The blood pressure response of test animals to extracts of urines from normal and hypertensive patients was essentially the same. Removal of the depressor substances from the urine by acetone extraction did not prove satisfactory, on the whole, the acetone fraction contained more pressor material and less depressor material than did the alcohol fraction. Although the exact nature of the pressor substance found in urine was not determined, experimental evidence is presented which indicates that it is not epinephrine or pituitary, and that it is a rather stable water-soluble substance which acts centrally rather than on the peripheral nerve endings or on the vascular system. The difference in the pressor effect of extracts from different patients, unless great, is not significant, because the methods of extracting and testing the pressor material are not sufficiently accurate.

**Effect of High Intrapleural Pressure on Blood Pressure.**—Head reports observations on the effects of increased intrapleural pressure on the blood pressure. The clinical picture resulting from an increase in pressure in the pleural cavity is sufficiently definite to be termed a syndrome. High pressure in the pleural cavity acts directly on both the pulmonary and the systemic circulation on the former by collapsing the lung and on the latter by compressing the great veins. Collapse of the lung causes (1) a decrease in the flow of blood through the collapsed lung, (2) a rise in pressure in the pulmonary circulation, (3) an increased strain on the right side of the heart and (4) a reduction in the vital capacity. Compression of the great veins causes (1) a rise in the venous pressure, (2) an insufficiency in the return of venous blood and (3) a decreased output of the heart. Up to relatively extreme degrees of pressure these hindrances are compensated by an increase in tone of the vasoconstrictor center. The first sign of the strain on this compensatory mechanism is an exaggeration of the Traube-Hering waves, a tendency for the peripheral resistance to give way during inspiration. A time comes when the center can no longer fully compensate, and the mean blood pressure falls below the critical level.

**Renal Amyloidosis.**—Altnow and his associates studied the clinical course in sixteen cases of renal amyloidosis in which amyloid deposits were demonstrated in microscopic section of kidney tissue by methyl violet staining at postmortem examination. If albuminuria and cylindruria appear in the course of advanced pulmonary tuberculosis complicated by a suppurative process, tuberculosis of the serous membranes, enteritis or any other major complication of tuberculosis or in tuberculosis of the osseous system, the diagnosis of renal amyloidosis may be entertained, with the expectation that further study will confirm it. If, associated with these changes, the liver and spleen are enlarged, the diagnosis may be considered reasonably well established. If the liver and spleen are not enlarged, the presence of edema, normal or low blood pressure, hyposthenuria, a normal output of dye, normal nonprotein nitrogen and normal eyegrounds support the diagnosis. The clinical complication of tuberculosis occurring most often in association with renal amyloidosis is clinical enteritis (ten cases). The most common complication observed post mortem is tuberculous adenitis (twelve cases). In all but two cases the precipitating complication or factor in determining the onset of the renal lesion may have been clinical enteritis, pleural effusion, empyema, the institution of pneumothorax and other surgical procedures. In ten patients the urine showed a consistently low specific gravity. In only one patient was the ability to secrete urine of normal specific gravity retained. The kidneys in this case showed probably the smallest amount of amyloid deposit present in the series. A diminished four hour output and impaired concentration were the most constant observations in the renal function tests. Hypertension occupies an inconspicuous position in the clinical picture of renal amyloidosis. It may be incidental rather than related to cause and effect. Arteriosclerosis of the retinal vessels and retinitis occupy a similarly inconspicuous place. If the usual textbook triad of the older clinicians of chronic suppuration, enlarged liver and spleen demonstrable by physical examination and albuminuria had been insisted on, the diagnostic error would have been 75 per cent.

**California and Western Medicine, San Francisco**

43: 321-392 (Nov.) 1935

- \*Black Widow Spider Poisoning Preliminary Report on Bite of Black Widow Spider So-Called Hour-Glass or Shoe Button Spider (*Latrodectus Mactans*) R M Gray Indio—p 328
- Experimental Clinical and Legal Aspects of Drug Addiction L E Detrick and C H Thienes Los Angeles—p 331
- Dinitrophenol on Liver Function R A Koch, R C H Lee and M L Tainter San Francisco—p 337
- Cyanide Poisoning Additional Note on Its Treatment with Intravenous Methylene Blue Solutions J C Geiger and J P Gray San Francisco—p 339
- The Law of Incompetency R L Chamberlain San Francisco—p 342
- What the Hospital Means to the Pathologist R A Glenn Oakland—p 345
- Treatment of Early Uncomplicated Syphilis S O Chambers Los Angeles—p 347
- Acute Perforation of Gallbladder with Generalized Choleperitoneum, E E Larson Los Angeles—p 350
- Heart Disease Complicating Pregnancy C A DePuy Oakland—p 355

**Black Widow Spider Poisoning**—The result of Gray's observations with convalescent serum seems to bear out the theory that an antitoxin or antivenom is developed by the complete recovery from the bite of a black widow spider and is present in the blood of spider-bitten victims or experimental animals, and, if used in time, it is reasonable to suppose that it will prevent the appearance of the symptoms or cure spider-bite poisoning

**Illinois Medical Journal, Chicago**

68: 385-476 (Nov.) 1935

- The Social Security Act and the Doctors C B Reed Chicago—p 403
- Diagnosis of Mesenteric Lymphadenitis E P Coleman Canton—p 408
- Health Insurance and Other Plans for Solution of Medical Economic Ills R K Packard Chicago—p 413
- Multiple Liver Abscesses R A Tearnan Decatur—p 419
- The Hygiene of Reading J E Lebensohn Chicago—p 425
- The Allergic Infant G M Cline Bloomington—p 429
- Intravenous Mercurochrome Therapy A P Martin Chicago—p 435
- Treatment of Lung Abscess as Judged by One Hundred and One Cases H C Luth Evanston—p 440
- Symptoms and Diagnosis of Obscure Fever J G Carr Evanston—p 446
- Epidemiology of Obscure Fevers G Koehler Springfield—p 453
- Laboratory Aids in Diagnosis of Fevers of Obscure Origin H E McDaniels Chicago—p 457
- Treatment of Obscure Fevers A Egdahl Rockford—p 462
- Poise or Nervousness F G Norbury Jacksonville—p 467
- Why Hospitalization of Non Service Connected Cases? E W Mosley Chicago—p 472

**Indiana State Medical Assn Journal, Indianapolis**

28: 565-638 (Nov. 1) 1935

- The Doctor's Place in Human Society W J Leach New Albany—p 565
- Clinical Aspects of Frontal Lobe Disease L J Karnosh, Cleveland—p 568
- Management of the Infant During First Three Months of Life I A Abt, Chicago—p 573
- The Senile Heart E F Kiser Indianapolis—p 580
- \*Undertreatment versus Overtreatment of Syphilis A F Hall Jr Fort Wayne—p 586
- Traumatic Rupture of the Gallbladder Report of Case A V Cole East Chicago—p 590
- Roentgenokymographic Study of Aortic Heart Disease E M Van Baskirk, Fort Wayne—p 592

**Undertreatment versus Overtreatment of Syphilis**

Hall states that life insurance studies confirm his observations in that they rather clearly indicate that the life expectancy of the syphilitic person untreated or treated, adequately or inadequately, is materially shortened. Without adequate treatment his chances of a long life are seriously threatened by late fatal manifestations of syphilis. With adequate modern treatment he is protected from this threat but appears to be left abnormally vulnerable to death from certain conditions apparently unrelated to syphilis, namely, pulmonary tuberculosis, appendicitis, pneumonia, suicide and cancer. The tendency of the cured syphilitic person to succumb is so marked during the first ten to fifteen years after his initial lesion that the ultimate mortality experience with the cured group is at best but little better than with the inadequately treated group. If this situation actually exists one may well ask whether it is of any use or even justifiable to prolong treatment beyond the point of protecting the public health to save a patient from death due to syphilis only to let him die of one of those other conditions at about the same age. To take such an attitude would be to forswear one of the most

deeply rooted ideals of the medical profession to do everything that can be done for the patient. Comparatively little can be done for him if treatment is curtailed and he is abandoned to the chances of death due to syphilitic cardiovascular or central nervous system disease, but once the patient is protected from these threats, much can be done to protect him from the others. If, by virtue of his past or present but latent disease, or by virtue of the extra load of antisyphilitic treatment or both, he is recognized as probably being particularly susceptible to pulmonary tuberculosis, appendicitis, pneumonia and/or cancer, he can be given the advantage of all the appropriate knowledge toward preventing and treating these conditions, when such susceptibilities are intelligently anticipated.

**Journal of Biological Chemistry, Baltimore**

111: 567-824 (Nov.) 1935 Partial Index

- Preparation and Nutritional Value of Hepatoflavine F J Stare, St. Louis—p 567
- Chemical Studies on Adrenal Cortex I Fractionation Studies on Hormone Concentrates J J Pfliffer O Wintersteiner New York, and H M Vars Princeton N J—p 585
- Id II Isolation of Several Physiologically Inactive Crystalline Compounds from Active Extracts O Wintersteiner and J J Pfliffer New York—p 599
- Plasma Lipids of Normal Men at Different Ages I H Page, E. Kirk W H Lewis Jr W R Thompson New Haven, Conn. and D D Van Slyke New York—p 613
- Effect of Age on Plasma Calcium Content of Men E. Kirk W H Lewis Jr and W R Thompson New Haven Conn.—p 641
- Selenium in Proteins from Toxic Foodstuffs III Removal of Selenium from Toxic Protein Hydrolysates E P Painter and K W Franke Brookings S D—p 643
- Alkaloid of Chin Shih Hn K. K. Chen and A. L. Chen Indianapolis—p 653
- Lipid Content of Jelly of Wharton E M Boyd Rochester, N Y—p 667
- \*Microchemical Study of Human Biliary Calculi T W Ray Milwaukee—p 689
- Sugar Determination by Ferricyanide Electrode P A. Shaffer and R D Williams, St. Louis—p 707
- Tyrosinase Action on Monohydric and Dihydric Substrates M Graubard and J M Nelson New York—p 757
- Copper Content of Urine of Normal Children A Ross and I M Rabinowitch, Montreal—p 803

**Microchemical Study of Biliary Calculi**—Ray analyzed a large number of human biliary calculi and found that there is no essential quantitative chemical difference between the two types referred to as cholesterol-pigment-calcium stones and cholesterol-pigment stones. Hence there is no quantitative chemical basis for the present classification of these two varieties. Some cholesterol-pigment-calcium stones were found to contain even more cholesterol and less mineral matter than do some cholesterol-pigment stones. Some stones of supposedly opposite varieties, when analyzed, proved to be remarkably alike. There is a surprising regularity in the way the constituents are deposited in some stones but as a rule these substances are laid down without order. Stones from the same gallbladder were found to be very similar from a chemical standpoint. By using modern microchemical methods the author has made quantitative chemical measurements on calcium, iron, phosphorus and manganese. Quantitative determinations on the water soluble substances of some stones are presented.

**Journal of Pediatrics, St. Louis**

7: 585-734 (Nov.) 1935

- \*Splenomegaly in Children with Early Hematemesis R M Smith and S Farber Boston—p 585
- \*Meningo-Encephalitis Following Rubella J F Briggs St. Paul—p 609
- Clinical Evaluation of Seven Prelacteal Feeding Procedures in Nine Hundred and Sixty Two Consecutive New Born Infants E H Schorer and F L Laffoon Kansas City Mo—p 613
- Congenital Muscular Defects with Especial Reference to Deficiencies of Pectoral Muscles J M Rector San Francisco—p 625
- Carcinoma of Thyroid Gland in Children R L J Kennedy Rochester Minn—p 631
- Clinical Aspects of Child Development Research A. Gesell New Haven Conn—p 651
- Standards of Basal Metabolism of Girls (New Data) and Their Use in Clinical Practice F B Talbot E B Wilson and Jane Worcester Boston—p 655
- Diphtheria Immunization Lillian Kositz Los Angeles—p 662
- Suprarenal Atrophy C E Snelling and I H Erh Toronto—p 669

**Splenomegaly in Children with Early Hematemesis**—Smith and Farber observed fifteen children with splenomegaly and early hematemesis. They believe that these children present sufficiently characteristic changes to warrant their classification

as a distinct clinical entity. Attention is called to the important significance of decrease in the size of the spleen after hemorrhage and the return to the previous or greater size after the restoration of blood loss. The blood picture in this group is normal except immediately after hemorrhage when it shows a secondary anemia. Children of this group have not developed cirrhosis of the liver and ascites as is characteristic in the late stages of Banti's disease. The primary pathologic lesion is considered to be portal or splenic vein obstruction due in most instances to thrombophlebitis secondary to infection in some other part of the body. Splenectomy does not prevent recurrence of hemorrhage. Ligation of vessels going to the stomach and esophagus offers a further means of treatment with the possibility of greater success in the prevention of recurrent hemorrhage. A study of the blood platelet count gives some indication of the probability of postoperative mesenteric thrombosis.

**Meningo-Encephalitis Following Rubella** — Briggs reports two cases of rubella in which meningo-encephalitis appeared as a complication. One death ensued, and postmortem examination confirmed the clinical diagnosis. He has knowledge of at least three other cases of meningo-encephalitis occurring in the same epidemic of rubella. These patients recovered from the illness. He states that the appearance of meningo-encephalitis in such an innocuous disease as rubella warns against depreciating the potentialities in any minor illness. During the months of December to February of this year, St. Paul suffered a widespread epidemic of German measles. Unlike most epidemics, adults were afflicted as well as children. At the onset of the epidemic the disease was mild but as it increased the appearance of purpura and severe lymphadenitis became unusual complications.

### Journal of Pharmacology & Exper Therap, Baltimore

55 235-376 (Nov.) 1935

Rate of Production of Anesthesia in Mice by Ether Containing Aldehyde and Peroxide. P. K. Knoefel and Florence C. Murrell. Nashville, Tenn.—p. 235

Comparative Actions of Sympathomimetic Compounds. Brochodilator Actions in Experimental Bronchial Spasm of Parasympathetic Origin. J. R. Pedden, M. L. Tainter and W. M. Cameron. San Francisco.—p. 242

Studies of Morphine, Codeine and Their Derivatives. V. Desoxymorphine C. Desoxycodine C. and Their Hydrogenated Derivatives. N. B. Eddy and H. A. Howes. Ann Arbor, Mich.—p. 257

Notes on Acetylcholine. R. Hunt. Boston.—p. 268

Study of Effects of Nicotinic Acid in Albino Rat. C. S. Smith, S. Rosenfeld Jr. and L. J. Sacks. Columbus, Ohio.—p. 274

Effects of Morphine and Its Derivatives on Intestinal Movements. IV. Dihydrocodeine and Dihydroallopseudocodeine. H. Krueger, H. Howes and H. Gaj. Ann Arbor, Mich.—p. 288

Pharmacologic Action of Dendroline, the Alkaloid of Chin Shih Hu. K. K. Chen and A. L. Chen. Indianapolis.—p. 319

Effects of Moderate Doses of Dinitrophenol on Energy Exchange and Nitrogen Metabolism of Patients Under Conditions of Restricted Dietary. M. L. Tainter, W. C. Cutting and Elizabeth Hines. San Francisco.—p. 326

Studies of Phenanthrene Derivatives. V. Homologous Acids and Aldehydes and Some of Their Derivatives. N. B. Eddy. Ann Arbor, Mich.—p. 354

Preparation of Prolactin. R. W. Bates and O. Riddle. Cold Spring Harbor, N. Y.—p. 365

Effect of Phlorhizin on Glomerular Filtration. E. E. Nelson. Ann Arbor, Mich.—p. 372

**Effects of Dinitrophenol on Metabolism**—Tainter and his associates studied the effects of dinitrophenol on the energy exchange and metabolism of three patients using a fixed diet of low caloric value and minimal protein content. Quantitative urinary, fecal and blood metabolite determinations showed no significant changes. The energy exchange was calculated from measurements of the respiratory quotient and nitrogen excretion. A week or more was used for control observations and then 0.3 or 0.4 Gm. of dinitrophenol was given daily for from one to two weeks. This period of medication was followed by a second or after-control period of about one week. Dinitrophenol increased the loss of body weight and simultaneously raised the metabolism between 36 and 95 per cent. The extra energy of the metabolism was derived mainly from fat and practically none from protein or carbohydrate. Accordingly dinitrophenol did not cause the breakdown of significant amounts of body protein when used in these doses even though the patients had

an inadequate intake of protein. The fat was oxidized completely without producing acidosis or ketone bodies. The daily administration of dinitrophenol, in doses comparable to those used clinically, did not demonstrably affect the total protein metabolism or any of the nitrogenous materials. The ethereal sulfate of the urine was not increased showing that dinitrophenol was not conjugated in the body as an organic sulfate compound. The neutral sulfur excretion and the neutral sulfur-nitrogen ratios showed no consistent changes during the medication. There was a slight increase in the inorganic sulfate excretion of two patients but the total effect was so small, when compared with the variations of the control period that it was of dubious significance. The inorganic, organic and total phosphorus of the urine, blood and feces remained practically unchanged. The increased metabolism was accompanied by an increased perspiration and diminished urine volume. The chloride content of the urine and feces indicated that there was little change in the excretion of this salt by either route or through the skin despite marked changes in the volumes of fluid excreted.

### Laryngoscope, St. Louis

45 827-910 (Nov.) 1935

Newer Concepts of Orogenic Meningitis. S. J. Kopetzky, New York.—p. 827

Report of Acute Infections of Middle Ear and Mastoid Process at Manhattan Eye Ear and Throat Hospital During 1934. Their Prevalence and Virulence. J. R. Page. New York.—p. 839

Intranasal Malignant Growths. W. Hartz. Philadelphia.—p. 844

Osteoma of Ethmoid. Report of Case. B. L. Bryant. Cincinnati.—p. 854

\*Treatment of Sinusitis by Displacement Method Using Ephedrine and Bacterial Antigens. L. K. Gundrum and H. Semenov. Los Angeles.—p. 858

Value of X-Ray Therapy in Chronic Sinusitis. E. D. Warren. Tacoma, Wash.—p. 864

\*Abortive and Curative Treatment for Common Colds. A. Bassler. New York.—p. 877

Cessation of Convulsive Seizures Following Injection of Alcohol into Sphenopalatine Ganglions. Three Cases. W. Sparer. New York.—p. 886

Rhabdomyoma of Vocal Cord. Report of Case. J. D. Kernan and A. J. Cracovner. New York.—p. 891

Complete Removal of Tonsils and Adenoids Under General Anesthesia Without Loss of Blood. Rosaria B. Rossell. Buffalo.—p. 894

Tie Douloureux Cured by Tonsillectomy. Case. M. Kornberg. New York.—p. 898

History of American Academy of Ophthalmology and Otolaryngology. M. A. Goldstein. St. Louis.—p. 900

**Treatment of Sinusitis by Displacement Method**—Gundrum and Semenov believe that the displacement method of sinus irrigation is more effective as a therapeutic procedure for ethmoidal sinusitis than present methods of using sprays, douches and nasal packs. The beneficial results obtained with dilute ephedrine in physiologic solution of sodium chloride as advocated by Proetz is no longer open to doubt. The shrinkage action is smooth and protracted and the total quantity of ephedrine given in the routine treatment seldom creates undesirable symptoms, as a matter of fact, few systemic effects have so far been observed except some slight beneficial action when the sinuses of asthmatic patients are instilled with this solution. The best results are obtained in the subacute catarrhal type of sinusitis. In the more or less chronic cases of simple uncomplicated sinusitis with frequent attacks of postnasal catarrh the addition of stock bacterial antigen (mixed streptococci, staphylococci and Bacillus coli) to the ephedrine solution is worthy of clinical trial. A dilute solution (10 per cent antigen) can be introduced without discomfort to the patient. If progress justifies a continuation of the antigen, the concentration may be increased until a 50 per cent solution is attained. In a series of 135 cases treated by this method, definite improvement was noted in more than 64 per cent.

**Abortive and Curative Treatment for Common Colds**—Bassler gives the results of 169 patients who had contracted a "common cold" treated by instillations to the nasal mucosa and nebulizations of the same solutions to the pulmonary stem mucosa of solutions of organic mercury compounds in which R<sub>1</sub> is the organic radical linked to the mercury and R the organic radical containing an acid group capable of forming a water-soluble sodium salt. These compounds, being of low toxicity for animal tissues show no tendency to precipitate blood

serum and other proteins and possess active bactericidal and virus destroying properties. The treatments consisted simply of discharging half a dropper of the solution with a quick squeeze of the bulb into the nostril on each side so that the solution floods the forepart of the inferior turbinates and runs to the throat, the patient breathes through the mouth and remains supine until the fluid runs posteriorly into the throat when he assumes the upright position. Advice was given not to "blow the nose" for fifteen minutes, and the patients were given a bottle of solution and a dropper so that they could treat themselves every three hours until the cold was gone. Usually benefit was experienced within the first hour after the instillation in the average head cold, this being especially true if the cold was treated in the first day, which cases required but a few doses for complete cure. Using mercurochrome, with which, because of its color, the observation can easily be made, the solution remains in the nasal cavity for about two hours during the day and for some time longer if an instillation is made at bedtime. The benefits accomplished suggest that the mercury compound in the solutions in some way fastens to the mucosa and in some circulatory way distributes itself, or that in coryza there is a pivotal point of infection present which, when stopped by the solutions, allows the rest of the mucosal congestion to subside quickly. When the cold was treated in the first twenty-four hours of its onset, the method gave complete control in 91 per cent in twenty-four hours and no failures up to seventy-two hours in all the cases so treated. When the cold had been present more than twenty-four hours, quick control was accomplished in about 50 per cent of the instances, moderate benefit in 40 per cent and failure in about 10 per cent. The results showed that the earlier during the coryza the treatments were employed, the better the results.

### Medical Annals of District of Columbia, Washington

4 289 312 (Nov.) 1935

- Complement Fixation Reaction in Dementia Praecox Preliminary Report. L. P. Shuppen Washington—p. 289  
Pancreatosis Parenchymatous Degeneration of Pancreas V. J. Dardinski Washington—p. 291  
Pneumonia in the District of Columbia H. F. Dowling Washington—p. 293  
The Fundamentals of Internal Medicine Diseases of Nervous System A. Schneider Washington—p. 297  
The Emblems of Medicine A. B. Bennett, Washington—p. 305

### Michigan State M. Society Journal, Grand Rapids

34 645 746 (Nov.) 1935

- Medicine Influence of Social Forces A. P. Biddle, Detroit—p. 645  
Maternal Mortality and the Practice of Obstetrics in Michigan J. C. Litzberg Minneapolis—p. 650  
Changing Aspect of Dermal Lesions in Relation to Internal Abnormalities R. C. Jameson Detroit—p. 654  
Perianal Suppuration as Focus of Infection L. J. Hirschman Detroit—p. 662  
Cancer Survey of Michigan F. L. Rector New York—p. 666

### New England Journal of Medicine, Boston

213:951 1004 (Nov. 14) 1935

- \*Malignant Hypertension H. A. Derow and M. D. Altschule Boston—p. 951  
Traumatic Rupture of Liver W. M. Shedden Boston and F. Johnston Concord Mass.—p. 960  
The Organization of a Varicose Vein Clinic H. F. Day Boston—p. 966  
Treatment of Varicose Ulcer E. T. Whitney and P. A. Consales Boston—p. 967  
Treatment of Phlebitis E. T. Whitney Boston—p. 970  
High Ligation in Treatment of Varicose Veins. W. S. Levenson Boston—p. 972  
Multiple Injection Method of Treating Varicose Veins S. S. Horlick Boston—p. 973  
Personal Experiences with Tumor of Bladder J. D. Barney Boston—p. 976

**Malignant Hypertension.**—Derow and Altschule point out that analysis of the cases seen at the Beth Israel Hospital with the clinical picture of malignant hypertension as described by Keith, Wagener and Kernohan revealed the fact that the hypertension in some of them was unquestionably of secondary origin. This was discovered only at postmortem examination and was entirely unsuspected during life. Moreover, even in those instances in which the hypertension was undoubtedly primary,

necropsy revealed a variety of underlying pathologic processes. Five typical cases under the direct observation of the authors are reported. They believe that malignant hypertension is a syndrome which may occur (1) with no evidence of previously existing hypertension, (2) as the end stage of essential hypertension with or without uremia and (3) as the end stage of a miscellaneous group of conditions, characterized by hypertension secondary to acute, subacute or chronic glomerular nephritis, pyelonephritis, adrenal tumor, pituitary basophilism, periarteritis nodosa, hyperemesis gravidarum, chronic lead poisoning, and so on. Since malignant hypertension is a syndrome and not a specific disease, the renal pathologic picture will show wide variation from patient to patient. The presence of acute necrotizing arteriolitis does not establish the diagnosis of primary malignant hypertension, nor does its absence rule it out. Whatever the nature of the underlying pathologic process responsible for the appearance of the syndrome of malignant hypertension is, the prognosis is uniformly poor.

### Northwest Medicine, Seattle

34 413-452 (Nov.) 1935

- Public Relations of Medicine. C. R. Scott Twin Falls Idaho—p. 413  
The More Common Pelvic Infections Their Etiology Pathology Differential Diagnosis Treatment and Prevention. G. H. Gardner Chicago—p. 417  
The Female Sex Hormones Origin and Therapy H. G. Willard Tacoma Wash.—p. 425  
Acute Polymyositis Observations on Cases Among Children in Spokane and Vicinity, 1934 E. J. Barnett and C. L. Lyon Spokane, Wash.—p. 429  
Influence of Nervous States on Stomach Disorders A. E. Hertzler Halstead Kan.—p. 432  
Allergy Its Recognized Causes A. H. Rowe Oakland Calif.—p. 434  
Problems of the Physician and the State Industrial Accident Commission W. K. Livingston Portland Ore.—p. 437  
Brickbats and Bouquets D. H. Lewis Spokane Wash.—p. 441  
Cold Urticaria Following Chickenpox Report of Case B. T. Fitzmaurice Seattle—p. 443

### Oklahoma State Medical Assn. Journal, McAlester

28 395-436 (Nov.) 1935

- Toxic Gaster J. C. Brogden, Tulsa—p. 395  
Classification of the Neuroses Its Value in Prognosis and Treatment C. H. Campbell Oklahoma City—p. 401  
Principles Involved in Surgical Diseases of the New Born J. F. Burton Oklahoma City—p. 406  
Mask of Maskers Duodenal Ulcer versus Perforation J. C. Perry Tulsa—p. 409  
Vertigo from the Otologic Standpoint. T. G. Walls Oklahoma City—p. 418

### Pennsylvania Medical Journal, Harrisburg

39 61 148 (Nov.) 1935

- Recent Advances in Nutrition E. V. McCollum Baltimore—p. 61  
Application of Mental Hygiene Methods in Pediatric Practice H. M. Little Pittsburgh—p. 65  
Study of Air Contaminants in Interest of Public Health Improved Method of Pollen Survey A. H. Zifferblatt and H. K. Seelaus Philadelphia—p. 67  
\*Acidophilus Therapy Studies in Implantation from Whey Cultures C. P. Brown and E. Redowitz, Philadelphia—p. 73  
Responsibility for Tuberculosis Hospital Provision Including the Use of General Hospitals C. J. Hatfield Philadelphia—p. 76

**Acidophilus Therapy.**—Brown and Redowitz examined the fecal specimens of persons taking acidophilus whey cultures under directions from their physician. It is their practice to examine the stool of every patient taking acidophilus culture to determine whether implantation has taken place. The first stool specimen was obtained after three 6-ounce bottles of culture were consumed, three tablespoonfuls of culture containing from 400,000,000 to 600,000,000 viable *Bacillus acidophilus* per cubic centimeter being taken each day. If the first examination showed good implantation (from 25 to 90 per cent of acidophilus), no further examinations were made unless requested by the physician. On the other hand, if the first examination showed no implantation or only a few colonies of *Bacillus acidophilus*, a second specimen of stool was obtained three weeks after the first one and one every three weeks thereafter until implantation occurred or treatment was discontinued. A tablespoonful of lactose with each dose of culture was advised in each case in which the second examination did not show a good implantation. It was found that implantation of *Bacillus*

acidophilus took place in 66.3 per cent of the group of patients studied at the time of the first examination, i. e., from twelve to fifteen days after treatment was commenced. In repeated examinations of feces, considerable variation was noted as to the number of acidophilus colonies present. The same was true in regard to streptococci and *Bacillus coli*. Implantation determined by cultural studies of feces cannot be regarded entirely as the criterion in acidophilus therapy, certain patients not showing implantation were reported by their physicians as being markedly improved physically. Clinical improvement of the patient should be considered also an important indication of the value of acidophilus.

### Philippine Journal of Science, Manila

56 229-404 (March) 1935 Partial Index

- Philippine Totaquina J. Marañon A. Perez Manila and P. F. Russell New York—p. 229  
Technic of Handling Mosquitoes. P. F. Russell New York and F. E. Baisas Manila—p. 257  
Effects of Chlorinated Lime in Lethal Concentrations on *Endamoeba histolytica* Cysts E. y. Garcia Manila—p. 295  
Styrax in the Philippines E. D. Merrill New York and E. Quisumbing Manila—p. 313

57 409-530 (Aug) 1935 Partial Index

- Glycerinated Rinderpest Vaccine Stored at Room Temperature T. Topacio Manila—p. 427  
Pasteur Antirabic Treatment at the Bureau of Science Manila. Ana Vazquez Colet Manila—p. 435  
*Dipyllobothrium latum* (Linnaeus 1758) Luhe 1910 in a Native Filipino E. y. Garcia and C. M. Africa Manila—p. 451

### Public Health Reports, Washington, D. C.

50 1485-1526 (Oct. 25) 1935

- \*Cultivation of Virus of Rocky Mountain Spotted Fever in Developing Chick Embryo. Ida A. Bengtson and R. E. Dyer—p. 1489  
Histologic Reaction to Virus of Rocky Mountain Spotted Fever in Chick Embryos R. D. Lillie—p. 1498

50 1527-1568 (Nov. 1) 1935

- Disabling Illness Among Industrial Employees in 1934 as Compared with Earlier Years D. K. Brundage—p. 1527

**Cultivation of Virus of Rocky Mountain Spotted Fever**—Bengtson and Dyer cultivated the virus of Rocky Mountain spotted fever in the developing chick embryo and maintained it through twenty passages without diminution in virulence for either the embryo or the guinea pigs. There was, on the other hand, some evidence of increase in virulence for the embryos, as they died earlier in the late generations. Guinea pigs inoculated with the embryo virus also developed fever earlier and died on the average one day earlier than when inoculated with the guinea pig virus. The virus was apparently more virulent for the embryos than for guinea-pigs, as the embryos usually succumbed on the fifth or sixth day after inoculation, while the average length of time of survival of the guinea-pigs was seven days. The membrane was at times infective for guinea pigs in dilutions up to 1:10,000. The virus was present in the brain and liver of the embryo, but the concentration was lower in the brain than in the membrane. Typical rickettsiae were present in the epithelial cells of the chorio-allantoic membrane of the embryo. The fact that rickettsiae were present in passage material far removed from the original material used for initiating growth lends support to the view that these organisms are concerned as the causative agent of the disease.

### Southwestern Medicine, Phoenix, Ariz.

19 331-368 (Oct.) 1935

- Physiologic of Bone in Relation to Traumatic Injuries W. W. Watkins Phoenix Ariz.—p. 331  
Bone Repair and Failure After Fractures. E. P. Palmer Phoenix Ariz.—p. 336  
Carpal Bone Injuries Industrially Considered R. F. Palmer Phoenix, Ariz.—p. 341  
Treatment of Carpal Bone Injuries J. M. Greer Phoenix Ariz.—p. 343  
Carpal Bone Injuries. Review of Thirty-One Cases W. B. Watts Jr. Miami Ariz.—p. 344  
Relationship Between Arizona Industrial Commission and Arizona Medical Profession L. Gwynn Phoenix, Ariz.—p. 348  
Indications for Surgical Treatment of Peptic Ulcer F. R. Harper Tucson Ariz.—p. 350  
Medical Annals of Arizona O. H. Brown Phoenix Ariz.—p. 351

### Texas State Journal of Medicine, Fort Worth

31 427-482 (Nov.) 1935

- Diagnosis of Tumors of Heart and Pericardium Description of Syndrome Encountered in Three Cases, Which Led to Antemortem Diagnosis in One Case S. A. Shelburne Dallas—p. 433  
Some Factors Governing Diagnosis of Heart Disease. W. B. Whiting Wichita Falls—p. 436  
Functional Heart Disease W. E. Nesbit San Antonio—p. 441  
Heart Disease in North Texas H. M. Winans and E. M. Dunstan, Dallas—p. 444  
Etiology of Essential Hypertension J. S. Sweeney Dallas—p. 448  
Blood Pressure Notes S. C. Red Houston—p. 450  
Back Sprain and Back Pain in Industry R. Trigg Fort Worth—p. 454  
Orthopedic Aspects of Low Back Pain. W. G. Stuck San Antonio—p. 456  
Review of Fifty Cases of Winter Allergy A. H. Braden Houston—p. 461

### United States Naval Med. Bulletin, Washington, D. C.

33 421-572 (Oct.) 1935

- Vitamins and Evolution of Navy Ration W. L. Mann—p. 421  
Benign Lymphocytic Choriomeningitis (Acute Aseptic Meningitis)—New Disease Entity P. F. Dickens—p. 427  
\*Caisson Disease and Its Relation to Tissue Saturation with Nitrogen C. W. Shilling J. A. Hawkins, I. B. Polak and R. A. Hansen—p. 434  
Naval Hospital Administration G. F. Cottle—p. 444  
Meningococcal Septicemia Report of Case Showing Organisms in Direct Blood Smear J. T. Boone and W. W. Hall—p. 446  
The Shilling Count in Acute Surgical Conditions E. P. Kunkel—p. 451  
Granulocytopenia R. G. Davis—p. 466  
Report of So-Called Epidemic of Glandular Fever (Infectious Mononucleosis) R. A. Nolan—p. 479  
Hematemesis J. D. Rives—p. 484  
System of Routine Dental Examinations and Treatments as Used on the United States Steamship Altair E. W. Willett and E. H. Delaney—p. 492  
Tumors and Associated Problems Part II F. K. Soukup—p. 494  
Influence of Thyroid in Healing of Wounds H. L. Puckett—p. 510

**Caisson Disease**—The forty-six cases of caisson disease that Shilling and his associates discuss occurred during the course of 2,143 experimental dives made over a period of three years at the experimental diving unit, Navy Yard, Washington, D. C., in the interest of submarine escape to determine how long a group of subjects could remain at a given depth and come to the surface without stops for decompression and not develop caisson disease. The actual decompression time varied from 11 minutes at 100 feet to 2.2 minutes at 200 feet, i. e., the time necessary to reduce the air pressure in the diving tank, which is comparable to the time required for an actual ascent from a sunken submarine at these depths. The depths at which experiments were conducted were 100, 150, 167, 185 and 200 feet. The men were watched carefully for the first indications of trouble, and thus the caisson disease encountered during the course of these experiments was diagnosed early and given the proper treatment. The cases of caisson disease are analyzed in relation to the relative saturation of the theoretical tissues of the subjects, which indicates that its incidence is very definitely related to the saturation of the theoretical tissues.

### Virginia Medical Monthly, Richmond

62 419-484 (Nov.) 1935

- Through a Doctor's Glasses F. H. Smith Abingdon—p. 419  
Toxemias of Pregnancy and Certain Deficiency Diseases R. A. Ross Durham N. C.—p. 424  
Disease in Military Campaigns N. Mercer Richmond—p. 426  
Contraception Analysis of Sixty Cases Using Combined Method Vaginal Diaphragm Plus Jelly W. M. Bowman Petersburg—p. 429  
Erythema Nodosum Report of Three Cases Following Measles T. E. Oast Portsmouth—p. 434  
Some Observations on Physical Survey of CWA Employees in Virginia F. J. Wampler, Richmond—p. 438  
Acute Collapse of Lung with Complications Due to Preexisting Pathology H. T. Hawkins A. M. McLaughlin Waynesboro and A. F. Robertson Jr. Staunton—p. 442  
End Results After Internal Fixation of Transcervical Fractures of Femur H. H. Wescott Roanoke—p. 446  
Early Diagnosis and Specific Treatment of Lobar Pneumonia. T. N. Hunsicutt Jr. Newport News—p. 448  
Epilepsy and Arteriosclerosis A. Gordon Philadelphia—p. 452  
Anemia Appreciation. J. R. Hamilton, Na sawadox—p. 455  
Plea for Birth Control A. H. Moore Doylestown Pa.—p. 462  
Foreign Body Around Penis Case Report. P. G. Fox Raleigh N. C.—p. 464



## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

**British Journal of Physical Medicine, London**

10 87 104 (Oct.) 1935

- Ultraviolet Treatment of Debilitated Children. Some Observations on Comparative Effects Obtained with Ultraviolet Light and Cod Liver Oil. G. H. Day—p. 88  
 Massage and Manipulation. Some Essentials of Success in Practice. D. Pennington—p. 92  
 Infra Red Irradiation. W. A. Troup—p. 94  
 Production of Infra Red and Ultraviolet Radiation. B. D. H. Watters—p. 96  
 Medical Hydrology in the United States. G. Hinsdale—p. 98

**British Medical Journal, London**

2 829 884 (Nov. 2) 1935

- Medical Science and Social Progress. Dawson—p. 829  
 Manifestations of Nasal Allergy. Their Diagnosis and Treatment. H. M. Jay—p. 833  
 \*Lupus Vulgaris. Note on New Method of Treatment by Intradermal Injection of Phenylethyl Hydnicarbate. N. Burgess—p. 835  
 Congenital Cystic Lung. A. A. Robertson—p. 837  
 Congenital Dilatation of Ureter. C. Hilliard—p. 838  
 Bilateral Fracture of First Rib. M. C. Oldfield—p. 839

**Lupus Vulgaris**—Burgess presents the results of treatment in eleven cases of lupus vulgaris by intradermal injection of from 0.1 to 5 cc. of phenylethyl hydnicarbate. The size of the injection varies according to the size and number of the nodules to be infiltrated. In cases from 1 to 5 the average number of treatments necessary to clear up the affected areas was between eight and nine. In case 3 "patch 1" was clear, except at one edge, after one treatment, while half of "patch 4" was clear after two treatments. In case 9 the nodules that remained after treatment with ultraviolet rays cleared up after one injection while in case 11 the lesions in the nasal mucosa cleared up after six injections. Cases 6, 7, 8 and 10 are still under treatment. In case 6 treatment was somewhat irregular, and on one occasion there was rather a severe local reaction. A similar reaction, but more intense, was observed in case 9 in which only one injection was given. In case 9 no lupus nodules were visible when the reaction had subsided. In the remaining cases the induration was relieved in a few days. Less improvement has been noted in case 6 than in the other instances. Case 10 is of interest in view of Muende's failure to obtain good results in children with creosoted moogrol. This case has only just come under treatment, but the reaction following the first injection is comparable with that seen in adults. Cases 5 and 11 show the value of the treatment affecting the mucous membranes. The cases still under treatment are making satisfactory progress. The advantages of this method of treatment are that (1) comparatively little pain is experienced by the patient, (2) the treatment sessions are of short duration, (3) the technic of treatment is simple and (4) after treatment very little scarring is present, the skin being quite supple. The results so far obtained indicate that the method is worthy of a more extensive trial.

**International Journal of Psycho-Analysis, London**

16: 399 534 (Oct.) 1935

- Logic of Emotions and Its Dynamic Background. F. Alexander—p. 399  
 Psychology of Pathos. A. Winterstein and E. Bergler—p. 414  
 Psychic Effects of Toxic and Toxic Substances. A. Gross—p. 425  
 Suggestion for Comparative Theory of Neuroses. L. Eidelberg—p. 439  
 Bad Habits. Susan Isaacs—p. 446  
 Bad Habits in Childhood. Their Importance in Development. Melitta Schmideberg—p. 455  
 Type of Woman with Three Fold Love Life. F. Wittels. New York—p. 462

**Irish Journal of Medical Science, Dublin**

No. 118 573-620 (Oct.) 1935

- Recent Advances in Cancer Research Made by Clinical Observations. W. Schiller—p. 573  
 Modern Treatment of Cancer. J. E. Gendreau—p. 584  
 Routine and Clinical Laboratory Research. W. R. O'Farrell—p. 591  
 Response to Treatment in Early Secondary Syphilis (S3) as Compared with Seropositive Primary Syphilis (S2). M. H. O'Connor—p. 602  
 Addison's Disease in a Young Girl. A. Thompson—p. 606  
 Thoracoscope in Treatment of Spontaneous Pneumothorax. Note. E. N. MacDermott—p. 608

**Journal of Laryngology and Otology, London**

50: 809 896 (Nov.) 1935

- Characteristics and Properties of Electrical Deaf Aids. J. Morris—p. 809  
 Scientific Audiometry and Selective Amplification in Design and Construction of Modern Deaf Aids. A. Tumarkin—p. 838

**Lancet, London**

2 987 1042 (Nov. 2) 1935

- Medical Education. An Address Given at Adelaide University on the Occasion of the Jubilee of the Medical Faculty. Horder—p. 987  
 \*Acute Pancreatitis in Childhood. Report of Case. R. H. Dobbs—p. 989  
 \*Irreducible Intussusception. Report of Four Cases. A. Elliot Smith—p. 992  
 Pyrotherapy in Dementia Praecox. D. Menzies—p. 994  
 Measurement of Loss of Hearing in Decibels by Means of Tuning Forks and Determination of Half Amplitude Time. J. Dundas Grant—p. 996  
 Weils Disease in a Sewer Worker. J. Maxwell—p. 998  
 Leptospirosis Infection from Stream. A. V. Neale—p. 999  
 Onchocerciasis in England. H. A. Osborn—p. 1000

**Acute Pancreatitis in Childhood**—Dobbs cites a case of acute pancreatitis in a child aged 12, contracted while under observation in the hospital, two weeks after a large collection of pus had been removed from a brain abscess. The etiology is discussed in the light of fourteen reported cases, summaries of which are given. Acute pancreatitis in childhood is usually an accidental observation at an abdominal operation or post mortem. This is due partly to the rarity of the condition and partly to the fact that its causes are quite different from the commonest causes of acute pancreatitis in the adult. The symptoms and signs may be sufficiently distinctive, however, to arouse suspicion of the true nature of the condition and can be confirmed by the urinary diastase test. Acute pancreatitis in childhood is but seldom etiologically related to a diseased biliary tract. Trauma accounts for many cases and *Ascaris lumbricoides* for a few, but in the majority no cause is found. Septic emboli lodging in the pancreas may occasionally be responsible. Operation should be undertaken promptly, allowing the rapid removal of destructive ferments and the blood-stained fluid which is always present.

**Irreducible Intussusception**—Elliot-Smith believes that the most important factor in making an intussusception irreducible is delay in its relief. Vascular obstruction leads to congestion, edema and finally gangrene of the intussusceptum, while at the same time peritoneal adhesions are forming between the entering and returning layers. The correct diagnosis in a typical case, depends on the history of acute abdominal pain, vomiting, presence of a tumor and usually the passage of blood by rectum. In three of the author's cases a diagnosis was not made until blood was passed rectally, with the result that operation was delayed. In the common ileocecal intussusception of infants, the small intestine passes rapidly into the colon and may even appear at the anus within a few hours. Severe symptoms and all the typical signs are frequently present within a short time of the commencement of the illness. At early operation reduction is usually easy, and the distance the intussusception has traveled does not necessarily increase the gravity of the prognosis. Intussusception commencing in the small intestine advances less rapidly than the ileocecal type, because the entering and ensheathing layers are of much the same lumen and the symptoms are much less severe, so that diagnosis is more difficult. The ensheathing layer forms a tight constriction at the neck of the intussusception which makes reduction difficult. In these cases indefinite symptoms and the tight constriction at the neck of the mass both favor the production of an irreducible intussusception. The four cases reported were all of this last type, one had remained entirely enteric while the other three had reached the colon by passing through the ileocecal valve. The patients were children aged 2 years and 4 months, 7, 10 and 11 years respectively, who are better able to stand abdominal operations, but the treatment suggested (lateral anastomosis) is applicable to cases of irreducible intussusception in infants and probably offers a better chance of recovery than resection. Lateral anastomosis relieves the obstruction and largely avoids the shock and dehydration associated with resection and ileostomy. Lateral anastomosis to short circuit the obstruction offers the best chance of recovery.

## Journal de Medecine de Lyon

16 675 706 (Nov 5) 1935

\*Epituberculosis A Dufourt and J Brun—p 675

Indications of Arteriography P Wertheimer and P Frich—p 699

**Epituberculosis**—According to Dufourt and Brun, epituberculosis is a curable congestive process that develops at the beginning of tuberculous infection. Various types may be distinguished. Primary epituberculosis occurs at the period of the original focal inoculation, and secondary epituberculosis is a later development. The epituberculous processes may assume an acute, subacute or chronic form. Many that have only a latent clinical existence are discovered by roentgenology. Four different forms may be identified: perifocal epituberculosis, juxtahilar epituberculosis, fissure epituberculosis and pseudolobar epituberculosis that involves the entire lung. Widespread acute epituberculosis must be grouped with the tuberculous pneumonias. The pathogenesis is definite. At first it was believed to have been concerned with essentially commonplace pneumonic processes that take place on a tuberculized ground. Today it is known that one is dealing with true tuberculous pneumonias that are poor in specific elements. Bacilli are found in these lesions and in the sputum, but only in small numbers. The epituberculosis process can be caused, to a certain degree, by the bacillary poison acting on a young and nonimmunized organism. The diagnosis of epituberculosis offers considerable difficulty. It is axiomatic that no roentgenogram of epituberculosis is strictly specific. The hereditary or personal tuberculous antecedents are important in differentiating epituberculosis from ordinary grippal or pneumonic congestions. Often, however, it cannot be distinguished at first. When finally determined to be tuberculous, it must be differentiated from caseous processes. Epituberculosis is far more common in children past 2 or 3 years of age. Furthermore, the absence of bacilli in the sputum and the direct examination constitute important elements in favor of epituberculosis. The prognosis is, in itself, essentially benign. Cases that are complicated by granulations or that result in a caseous transformation are rare. They are usually the result of superimposed infections and are found mainly in nurslings. Treatment consists in rest cure in the mountains. Pneumothorax is not practiced.

## Paris Médical

2 325 340 (Oct 26) 1935

Galactosuria Test in Gallbladder Lithiasis M Chiray G Albot, M Deparis and G Tsangridis—p 325

Contribution to Study of General Anesthesia by Intravenous Ethobutyl ethylmalonylurea B Desplas L Lauvay and G Chevillon—p 333

Pathogenesis of Gout C J Finch—p 336

**Ethobutylethylmalonylurea**—Desplas and his co-workers report experimental and clinical observations on the intravenous use of ethobutylethylmalonylurea as a general anesthetic. This substance has the advantages of rapid elimination, anesthetic action and the possibility of complete narcosis without any adjuvant. They have used this anesthesia in fifty-two cases and in five of these no complementary anesthesia. A 6 per cent solution is injected slowly during a period of five or six minutes. About 15 cc is used. The anesthesia obtained is characterized by slight acceleration of the pulse rate, diminished respiration without disturbance of rhythm or amplitude, practically constant arterial pressure, slight cyanosis, and abolition of the reflexes. The waking period is prolonged, thus minimizing early postoperative discomforts. The authors have had no unfavorable complications of any kind. The patients are highly enthusiastic about this type of anesthesia.

## Presse Medicale, Paris

43 1705 1720 (Nov 2) 1935

Differential Diagnosis Between Icterus Due to Bile Duct Obstruction and Icterus from Hepatitis M Brule and J Cottet—p 1705

Two Personal Methods of Treatment of Chronic Cholecystitis E Mach line V Grigorenko and Z Corbounova—p 1708

**Treatment of Chronic Cholecystitis**—Machline and his co-workers report two methods for the treatment of chronic cholecystitis. The first is based on the idea of associating the antiseptic action of methenamine with the vagosympathetic action of calcium salts. The technique is simple. It consists in filling a syringe with about 5 cc. of a 10 per cent solution of

calcium chloride and 40 per cent methenamine. The injections are made in the median basilic vein daily for two weeks. The dose is increased until 20 cc of the mixture is injected at a time. Fifteen patients were treated in this way. In general the pain was observed to disappear, the duodenal contents improved rapidly, the leukocytes, epithelial cells and mucus disappeared, the appetite returned and the patients gained weight. The second method of treatment consisted in using gentian violet. A 1 per cent solution, carefully filtered, was injected intravenously in 10 cc. quantities. The injections were also repeated daily. Nineteen patients were treated in this manner and in all but one the response was good. The explanation for the favorable action of these substances is not yet entirely clear, but the practical results were good.

## Polichinico, Rome

42: 629 684 (Nov 1) 1935 Medical Section

\*Magnesiemia in Man After Parathyroid Extract Injections Relations Between Magnesium Calcium and Phosphorus in Blood G Meli and N Karadimova—p 629

Lipemia in Endogenous Emaciation G Borruso—p 637

Endocrine Factors in Pathogenesis of Chronic Leukemia R Gosio—p 656

Tubercle Bacillus in Blood in Course of Lobar Pneumonia and Anergic Diseases Experiments G Daddi and A Fabris—p 670

Malignant Lymphogranuloma and Pulmonary Tuberculosis Case A Di Porto—p 674

**Magnesiemia After Parathyroid Injections**—Melli and Karadimova made hourly simultaneous determinations of magnesium, calcium and phosphorus in the blood of twenty normal persons after an injection of 200 Collip units of a parathyroid extract preparation. They conclude that the injection of parathyroid extracts causes a transient but noticeable increase of magnesium in the blood within an hour after the injection, it reaches its greatest amount in three hours and returns to normal four hours after the injection. Calcium increases within four or five hours after the injection, reaches its greatest amount in nine hours and returns to normal fourteen hours after the injection. Phosphorus diminishes within seven hours, reaches its lowest level in nine or ten hours and returns to normal thirteen or fourteen hours after the injection. Calcium and magnesium react more constantly to parathyroid extracts than phosphorus does. By comparing the reaction of calcemia to parathyroid extracts in normal persons with that previously reported in experiments on dogs, it is obvious that the reaction takes place earlier in the former than in the latter. The disturbances of the magnesium metabolism whether provoked or pathologic, have the same diagnostic significance in parathyroid dysfunction (experimental or clinical) as that of the calcium and phosphorus metabolisms. In pathologic conditions the parathyroid dysfunction causes metabolic disturbances of simultaneous development and the same intensity on the magnesium, calcium and phosphorus of the blood.

42: 2151 2194 (Nov 4) 1935 Practical Section

Duplication of Second Sound at Base of Heart During Inspiration as

Sign of Pleuropulmonary Cirrhosis V Mura—p 2151

Hemostatic Value of Thrombocytine E Rastelli—p 2158

**Duplication of Second Heart Sound**—Mura reviews the characteristics of the duplication of the second heart sound either physiologic or due to hypotension of the pulmonary circulation and discusses the pathogenic theories on its production. He then describes a new type of duplicated second heart sound the behavior, pathogenesis and significance of which are different from those of the physiologic and pathologic duplicated sounds. This sound is audible at the base of the heart, generally at the focus of the pulmonary artery and rarely at that of the aorta. It increases during inspiration, especially if the patient is in the horizontal position and decreases and sometimes even disappears during expiration. The second semitone is louder than the first. The duplication is due to a retardation in the closure of the semilunar valve either the pulmonary or the aortic and is more clearly audible at the focus of the involved than at that of the uninvolved semilunar valve. It appears in persons with a normal heart who are suffering from a retraction of the corresponding half of the thorax and indicates more or less diffuse sclerosis in the lung of the involved side. It can be defined as a duplication of the second heart sound during inspiration to differentiate it from the physiologic and pathologic duplications of the heart sound previously described.

**Prensa Médica Argentina, Buenos Aires**

22: 2151-2198 (Nov 6) 1935 Partial Index

- \*Cutaneous Sensitivity and Sun Radiations in Skin Cancer Its Relation to Cholesterol A H Roffo and A E Roffo Jr—p 2151  
Neuralgia of Larvate Malaria Simulating Renal Syndrome L Figueroa Alcorta and H Reynoso Naon—p 2174  
Gold Therapy in Rheumatism C J Portela and C Guerra—p 2176

**Cutaneous Sensitivity and Sun Radiations in Skin Cancer**—The Roffos state that there is a relation between the amount of cholesterol in the blood and the predisposition of certain types of skin to develop cancer. In support of their statement they found that sensitivity to light in patients with hypersensitive skin changes in the same person according to the resulting increase or decrease of cholesterol in the blood. It has been found in man, as well as in animals, that hyperkeratosis and cancerization of the skin by solar irradiations follow a phase of local accumulation of cholesterol in the irradiated areas. This shows that cancerization of the skin is due to a photodynamic phenomenon in which cholesterol acts as the sensitizing agent making the skin hypersensitive to light. Cholesterol, because of its phototropic and photo-active properties to sunlight, plays an important part in the biochemical predisposition of the skin to the development of cancer.

**Revista de la Soc Argent. de Biología, Buenos Aires**

11: 339-434 (Sept) 1935 Partial Index

- \*Modifications of Nervous Excitability Caused by Cobra Venom V H Cicardo—p 350  
Auscultation and Graphic Recording of Auricular Sounds Through Esophageal Sound A C Taquini and E Braun Menendez—p 410

**Excitability Caused by Cobra Venom**—Cicardo studied the modifications of the excitability of the motor and sensory nerves that followed an injection of cobra venom in normal toads by either the lymphatic or the intravenous route, in doses of 2 or 4 mg and 0.5 mg, respectively, per hundred grams of body weight of the animal. The nervous excitability was determined at the sciatic nerve in its relation to the gastrocnemius muscle. The author concludes that cobra venom produces a progressive and simultaneous increase of both the rheobasis and the chronaxia of the motor nerves before producing curarization of these nerves. The muscular chronaxia either does not change or slightly increases. Curarization takes place first in the body of the muscle and later on in the fibers of the muscle that are near the tendon. The leg of the animals that is excluded from circulation by means of ligation, according to Claude Bernard's technic, does not become curarized. The facts indicate that curarization of the muscles is caused by modifications of the nervous excitability and that paralysis occurs in the intramuscular nervous fibers. The reflex excitability changes earlier than does the peripheral excitability, as seen by the gradual weakening up to disappearance of the reflex and by the increase of the sensory rheobasis. When curarization starts, the sensory rheobasis increases simultaneously with the summation time of the stimuli. The sensory reflex cannot be produced after the muscle is curarized.

**Beiträge zur Klinik der Tuberkulose, Berlin**

87: 75-140 (Oct. 22) 1935 Partial Index

- \*Acid Therapy as Aid in Combating Tuberculosis. Von Kapff—p 75  
Functional Diagnosis of Liver in Patients with Tuberculosis R. J. Drabkina—p 78  
Calcification of Pleura (Chirass Pleura) During Childhood J L Burckhardt—p 90  
New Experimental Studies on Atypical Retarded Koch's Phenomenon Local Tissue Reaction in Case of Revaccination with Tuberculous Toxins F Giordano—p 96  
Cure of Tuberculous Ulcers of Tongue and of Posterior Pharyngeal Wall by Exclusively Conservative Treatment K. Schubert and P. Frubmann—p 137

**Acid Therapy in Tuberculosis**—Von Kapff had the opportunity to make observations in industrial plants in which the air was saturated with acid gases of various kinds. The workers were exceptionally healthy and practically immune against colds, infectious disorders, bronchitis, asthma, influenza and particularly tuberculosis. Most of them reached a rather advanced age. This was so well known among the workers that employees of other plants, who suffered from the aforementioned disorders, often requested to be transferred to the plants in

which acids were used. The author began his studies in 1908, and after about ten years of experimentation on animals and on human subjects he reported his observations. He emphasizes that the acid gases influence the skin and particularly the mucous membrane in such a manner that the development of pathogenic organisms is inhibited. Several years of observation on tuberculosis proved that the inhalation of acids prevents tuberculosis.

**Deutsche medizinische Wochenschrift, Leipzig**

61: 1831-1870 (Nov 15) 1935 Partial Index

- Indications for and Dangers in Laparoscopy H Kalk—p 1831  
\*Gastric Hypotonia of Apparently Hypophyseal Origin H Curschmann—p 1834  
Rapid Cholecystography R Kaiser—p 1836  
\*Niche as Symptom of Gastric Cancer A Kahlstorf—p 1839  
Clinical Experiences with Gastric Mucin in Treatment of Gastroduodenal Ulcers and Hyperacidity G Rothhaue—p 1852

**Gastric Hypotonia of Apparently Hypophyseal Origin**—Curschmann gives the history of a woman, aged 55, who had hypotonia of the stomach with reduced motility and hypersecretion. In view of the severe hypotension of the blood pressure and of the cachexia, the author decided to investigate the origin of the gastric hypotonia in the direction of a hypoadrenal or a hypophyseal disturbance. He studied the basal metabolism, the specific dynamic action of protein, the renal function and the epinephrine and insulin tolerance. A prehypophyseal disturbance was suspected and the patient was given daily injections of an extract of the anterior lobe of the hypophysis, with a surprising result. She improved rapidly, her appetite increased, she was able to eat without being troubled by gastric disturbances, the constipation disappeared, and she gained weight. In view of the peculiarity of the case and of the predominance of the gastric symptoms, the author thinks that the diagnosis of hypophyseal cachexia requires explanation. It was justified, on the one hand, because other disorders leading to cachexia (carcinoma or tuberculosis) were absent as were also psychopathic disorders, and, on the other hand, because of the severity of the loss of fatty tissues, the falling out of the teeth, the involution of the genitalia and, particularly, certain incretory and metabolic reactions. To be sure, there was no reduction in the basal metabolism, which is otherwise a frequent symptom of hypophyseal cachexia. However, the complete absence of the specific dynamic protein action in a person without obesity indicates an endocrine, probably a hypophyseal disorder. Other factors that indicate insufficient function of the anterior hypophysis are the severe reduction of the blood pressure and the low blood sugar values. The hypotension is probably the result of an insufficiency of the interrenotropic hormone, and the hypersensitivity to insulin is probably due to a reduction in the contra-insular hormone of the anterior hypophysis. The peculiar changes in the renal function in the absence of renal disease likewise indicate a prehypophyseal disorder. The efficacy of the injection of prehypophyseal extract is another factor favoring the correctness of the diagnosis. The most noteworthy aspect of this case is the observation that disturbances in the tonus and the motility of the stomach may be the dominating symptom of a hypophyseal disturbance. The author concedes that it is difficult to say the lack of which particular hormone impairs the gastric tonus in cases of hypophyseal cachexia, and he thinks that this case is a reminder of the necessity of studies on the gastric tonus and its modification by the various hypophyseal hormones.

**Niche as Symptom of Gastric Cancer**—Kahlstorf shows that, although the recognition of the typical ulcer niche involves no difficulty, the correct interpretation of large and atypical niches may prove difficult. It is necessary to consider the previous history and the shape, size and localization of the niche. Its failure to decrease in size after strict ulcer treatment makes a secondary development of cancer seem probable. However in addition to this secondary development of cancer in ulcers, a primary carcinoma may also develop in the form of a niche or the niche may be the dominating roentgen sign of an existing cancer. The author describes two forms of primary cancer niches. First there is the so-called plateau niche, which is characterized by a flat bay on a wide base. It is always cancerous and its anatomic substrate is the crater of a disklike carcinoma. The second form resembles the ordinary ulcer niche. In addition to the discrepancy between the dura-

tion of the symptoms and the size of the niche, it is characterized chiefly by an irregular filling ("shadow minus within a shadow plus") and an indistinct depressed contour of the stomach in the surroundings of the niche ("shieldlike defect") This form is nearly always of a cancerous nature, however, in rare cases it may be due to other causes, such as adhesions

### Deutsche Zeitschrift für Chirurgie, Berlin

246: 437-556 (Sept. 30) 1935 Partial Index

Syphilitic Osteochondritis Developing in Course of Latent Congenital Syphilis Specific Diseases of Epiphyses in Older Children with Congenital Syphilis B Reich—p 437

\*Observations on Trendelenburg Operation for Pulmonary Embolism O Wustmann and J Hallervorden—p 472

Extensive Resection of Lungs in Sarcoma of Wall of Chest. R. Nissen—p 485

\*Electrocardiographic Observations in Case of Needle in Right Side of Heart. R. Nissen and M. Güçhan—p 504

**Trendelenburg Operation for Pulmonary Embolism**—Wustmann and Hallervorden state that in the course of two years six patients were submitted to the operation of pulmonary embolotomy in the surgical clinic of the Düsseldorf Medical Academy In five patients, the heart was at a standstill when the pericardium was opened. Three of the patients were made to survive for a number of hours A permanent result was not obtained in any case. In one patient, in whom operation was performed fifteen minutes after the onset of life-threatening symptoms, Professor Frey removed a thrombus 52 cm long from the pulmonary artery The heart action was suspended for six minutes and the respiration for sixteen minutes The heart was at a standstill when the pericardium was opened. Six minutes after the injection of 4 cc. of epinephrine into the left auricle and the left ventricle, the heart began to contract. Pulmonary edema developed and the patient died twenty-three hours later A careful microscopic postmortem study of the brain demonstrated that all the ganglion cells from the frontal pole to the occipital pole had undergone profound alterations of ischemic nature The authors believe that the central nervous system is the first to undergo grave ischemic changes and the heart muscle next The patients made to survive are further threatened by a tendency to pulmonary edema and pneumonia The authors believe that irreversible alterations in the central nervous system take place when the heart has been at a standstill for more than five minutes They conclude that the results of the operation can be improved only by shortening of the period between the onset of symptoms and the operation of embolotomy

**Needle in Right Side of Heart**—Nissen and Güçhan report a case of a girl, aged 4½, who fell on a darning needle. Roentgenograms revealed a double shadow of the needle in the right side of the heart Electrocardiograms showed alterations characteristic of a myocardial infarct. At operation the needle was found to have pierced the anterior and posterior walls of the right ventricle. The needle was expressed. The patient made an uneventful recovery The electrocardiograms obtained on healing no longer showed the alteration noted in the electrocardiogram obtained before the operation

### Klinische Wochenschrift, Berlin

14 1633-1664 (Nov 16) 1935 Partial Index

Vegetarian and Raw Diet Artificial Digestion Experiments H Steudel—p 1635

\*Cevitamic Acid and Function of Adrenal Cortex R Tislowitz—p 1641

Experiments on Focus Demonstration in Brain by Means of Thorium Dioxide Sol Jorns—p 1650

\*Urobilinogen Values in Feces and Their Differential Diagnostic Significance H Ehler and F Fretwurst—p 1654

**Cevitamic Acid and Function of Adrenal Cortex.**—Tislowitz points out that it has been suggested repeatedly that medication with vitamin C in the form of cevitamic acid is helpful in the treatment of Addison's disease, in that it reduces the pathologic pigmentation and improves the general condition. In reviewing the literature on the relations of cevitamic acid to other vitamins and to the formation of pigmentation, he shows that there are a number of factors indicating a relation between cevitamic acid and the adrenal function. He decided to compare the action of cevitamic acid with the effect of adrenal

cortex extract in tests on normal dogs and on dogs with adrenal insufficiency In studying the influence on the blood cholesterol, he found that in contradistinction to the adrenocortical extract cevitamic acid has no influence on the blood cholesterol of normal dogs or of dogs with adrenal insufficiency Since the circulating quantity of blood is reduced during adrenal insufficiency, the author investigated the effect produced by cevitamic acid on this factor He found that, whereas cortical extracts increase the quantity of circulating blood, cevitamic acid leaves it unchanged or reduces it further A similarity between the disturbances in the water economy of adrenal insufficiency and of C avitaminosis induced the author to study the water economy, and he discovered that the action of cevitamic acid and of cortical extract is not identical but that cevitamic acid has a slight diuretic effect. In further studies it was found that cevitamic acid causes a slight reduction in the temperature Hypotonic conditions are characteristic for Addison's disease as well as for avitaminoses It was found that in their effect on these conditions cortical extract and cevitamic acid show a certain relationship, for both effect an increase in the tonus, which may be due to the fact that the two have a common point of attack in the adrenal cortex In the course of the experiments with cevitamic acid it was found that the animals showed fatigue, accompanied by a slowing down of the heart action, changes in the morphologic blood picture, increase in the alkali reserve and other factors that indicate vagotonia The processes are too complicated for a relationship to the adrenal function to be ascertained and the author gained the impression of a correlation with the hypophysis and the sympathetic centers In discussing the effect of cevitamic acid on pigmentation, he points out that among other factors the condition of the vessels plays a part The increase in the vascular tonus produced by cevitamic acid may involve relations to the adrenocortical function as well as to the hypophysis In this connection the author cites the successful treatment of diaphoretic circulatory weakness with adrenocortical extract and vitamin C and suggests that extracts of the adrenal cortex or of the hypophysis together with vitamin C may prove helpful in the treatment of circulatory disturbances that develop on an infectious or a toxic basis

**Significance of Urobilinogen Values in Feces**—Ehler and Fretwurst studied patients with pernicious anemia and carcinoma and patients with obscure gastro-intestinal disturbances, hepatic disturbances and so on They observed greatly reduced urobilinogen values in the feces of nearly all demonstrated carcinomas of the gastro-intestinal tract However, this reduction was noticeable only in carcinomas located below the cardia, in carcinomas of the esophagus there were no deviations In new, untreated cases of pernicious anemia, the urobilinogen values were extremely high Patients who had previously received liver treatment had only slightly increased values When the quantitative determination was repeated in the course of the treatment, the urobilinogen content of the feces decreased rapidly In patients with ulcer the results were not so unequivocal for there were cases giving greatly increased and others giving greatly decreased values In functional disturbances the values were not constant In icterus caused by the occlusion of the choledochus the values were considerably reduced In patients with especially large carcinomas, who were cachectic and anemic, normal or even increased values occurred The authors think that this can be explained by the fact that the toxins likewise influence the life span of the erythrocytes and the increased quantities of erythrocyte waste matter compensate for the primary reduction in urobilinogen However, these cases are not important in this connection, because all the patients had been ill for a long time and the tumor had been recognized The authors describe the histories of two patients with greatly reduced urobilinogen values in whom carcinoma existed Of thirty-one patients in whom carcinoma of the gastro-intestinal tract was suspected, twenty-seven had urobilinogen values indicating carcinoma The other four patients had extremely large tumors and anemia and cachexia Of fourteen patients with pernicious anemia eight were new, untreated cases and had increased urobilinogen values The other six had been treated before The authors conclude that this method will be helpful in confirming diagnoses and in the explanation of obscure cases

**Medizinische Klinik, Berlin**

31 1485 1520 (Nov. 15) 1935 Partial Index

- \*Diuretics and How to Increase Their Efficacy R. Fleckseder—p. 1492  
Clinical Contribution to Psittacosis F. Gross Hardt—p. 1495  
Treatment of Varicose Veins According to Method of Moszkowicz A. Fessler—p. 1499  
\*Therapy of Myxedema with Thyrotropic Hormone A. Schneiderbauer—p. 1500  
Subjective Disturbance in Color Perception in Supratentorial Tumors H. Hoff and O. Potzl—p. 1501

**Diuretics and How to Increase Their Efficacy**—Fleckseder surveys the effective diuretics. He mentions (1) water in the form of the so-called water thrust, (2) salts, (3) vasodilatory remedies, (4) cardiac remedies, (5) thyroid preparations, (6) bile acids and (7) mercury preparations. He discusses when and how these different diuretics should be used and the various possible combinations between diuretics and physical and dietetic measures. Among other factors he stresses the importance of rest in bed, because in cardiac and renal insufficiency the elimination of water by the kidneys is greater than when the patient is in the erect posture. Elevation of the lower half of the body is helpful in many instances and the application of heat may improve the diuretic effect. Moreover, the use of some cathartics, particularly mild mercurous chloride, may improve the diuresis. As important dietetic measures the author stresses small, frequently repeated meals, also the use of salt-deficient, dry diets and the intercalation of hunger and thirst days and of fruit days. In the last part of his report he discusses the intensification of the action of the chemical diuretics by their simultaneous or successive administration.

**Therapy of Myxedema with Thyrotropic Hormone**—Schneiderbauer points out that, since the discovery of the thyrotropic hormone, the relations between the hypophysis and the thyroid have become better known. It was found that the thyrotropic hormone not only influences the morphologic structure and increases the activity of the thyroid but also causes increased secretion of thyroid substances into the organism. In accordance with these observations, attempts were made to use the thyrotropic hormone in the treatment of such conditions as myxedema, cretinism and obesity. The author used the thyrotropic hormone in the treatment of a man, aged 45, in whom the myxedematous condition had developed gradually in the course of four or five years. He was given daily intramuscular injections of 600 units of the thyrotropic hormone of the anterior lobe of the hypophysis. The first series of treatments lasted fifteen days, in the course of which 9000 units was administered. Repeated metabolic tests revealed that the rate changed from minus 30 gradually to normal and to plus 14. The iodine content of the blood likewise increased considerably. Moreover, there was an increase in the pulse rate, a reduction in the body weight and a noticeable change in the psychic behavior. The fatigue disappeared and the patient was more lively and industrious. When the injections were discontinued for three weeks, the basal metabolism and the iodine content of the blood decreased again and there was once more an increase in weight. A new series of ten injections was given and there was again an improvement. After another interval of four weeks, although the weight had remained the same, the basal metabolic rate and the iodine content of the blood had again become reduced and a third series of injections was given (again ten). Following this third series, signs of subsidence of the improvement appeared again after six weeks. The author discusses the mode of action of this treatment.

**Monatsschrift f. Geburtshilfe u. Gynäkologie, Berlin**

100: 185 296 (Oct.) 1935 Partial Index

- Therapy of Leukorrhea C. Menge—p. 185  
Improvement of Surgical Technique in Cranioclasia E. Kehr—p. 195  
Fundamentals of Treatment of Leukorrhea R. T. von Jaschke—p. 201  
\*Action of Antithyroid Protective Substances on Milk Secretion P. H. Schumacher—p. 211  
Unilateral Edema in Eclampsia R. Knebel—p. 258

**Action of Antithyroid Substances on Milk Secretion**—Schumacher directs attention to a report in which Küstner states that he observed a reduction in the milk supply of lactating women following the administration of thyroid substances and that on the basis of this he tried to stimulate milk secretion by the administration of antithyroid substances. Küstner's experiments corroborated his hypothesis for the milk supply

was increased in the majority of puerperal women to whom he administered antithyroid substances. These observations induced Schumacher to employ Küstner's method systematically on the puerperal women of the Giessen clinic. The material consisted of 150 women. One of each three was left without medication, the second was given two tablets of an antithyroid substance three times daily, and the third received one tablet of another antithyroid substance three times daily. Observations on sixty primiparas (twenty in each of the three groups) proved that the antithyroid substances do not promote the milk secretion, on the contrary, the women who were not treated with antithyroid preparations produced slightly more milk. Observations on sixty-six multiparas gave practically the same results. Even in twenty-four women with clinical signs of hyperfunction of the thyroid the results proved negative.

**Munchener medizinische Wochenschrift, Munich**

82: 1819 1854 (Nov. 15) 1935 Partial Index

- \*Is Early Bougienage of Acute Corrosion of Esophagus Justified? S. Belinow—p. 1821  
\*Digestive Hormone of Wall of Gallbladder with Lipolytic Activator Effect B. O. Pribram—p. 1823  
Postoperative Parotitis M. Vorlíček Jelinek—p. 1828  
\*Unusual Transmission of Infectious Disease. H. Schmorell—p. 1830

**Acute Corrosive Esophagitis**—Belinow compares the results he obtained in the treatment of 174 cases of acute corrosive esophagitis with those obtained by Salzer, showing that Salzer's more favorable results are largely explained by the fact that his patients were all children, in whom the corrosions are generally not as severe as in adults. Moreover, Salzer used neither roentgenoscopy nor esophagoscopy to determine the severity of the corrosion. The author discusses the diagnosis of acute corrosive esophagitis, particularly the advisability of early esophagoscopy. He thinks that, if a careful technic is used, esophagoscopy involves no danger, because it is done under visual control. Early bougienage, on the other hand, is dangerous because it is done blindly and without exact knowledge of the localization and the severity of the corrosion. The author warns against pressure because it may result in perforation. He performs esophagoscopy without anesthesia and on the basis of experimental and histopathologic studies and of clinical observations he concludes that dilation, when done at the right time, will prevent cicatrization and stimulate the formation of elastic tissue that does not greatly impair the function of the esophagus. During the first few days after the corrosion dilation is of no avail, because the esophageal wall is inflamed and requires rest. It is advisable to begin bougienage after seven or ten days, because the form and dimensions of the fibroblasts and of the collagen fibrils will be altered in such a manner that the esophageal lumen will become sufficiently wide and will assume a regular, round shape. The dilation must be done with great care, for the young granulation tissue tolerates only mild manipulations.

**Digestive Hormone of Gallbladder**—Pribram says that careful study of the so-called relapse disturbances after operations on the gallbladder, particularly after cholecystectomy, convinced him that there are disturbances which are manifestations of the abolition of the function of the gallbladder. The recognition of the physiologic significance of the gallbladder induced him to develop a conservative surgical method, namely cholecystocholedochostomy. In this paper the author is chiefly concerned with the regulatory action exerted by the gallbladder in the digestion of fat. He found that the gallbladder contains a substance, which is apparently secreted by the mural glands and which, at a pH of 8.9, greatly intensifies the action of the pancreatic lipase. The mural extract of the gallbladder obtained by a surgical intervention exerts a much greater activator action on the pancreatic lipase than does the bile contained in the bladder. Chemical analysis of the substance disclosed that it is free from protein and dialyzable. The author standardized the extract that contains the active substance in that he designated as a unit the amount of activator substance which within three hours is capable of doubling the lipase action. The substance activates only lipases, it does not affect the action of proteolytic and saccharolytic ferments. In an oil digestion mixture it reduces the size of the droplets much more rapidly than does lipase alone. Following its parenteral injection there is an increase in the activator titer



of the serum as well as of the duodenal juice. The quantity of bile increases likewise after the injection of the substance and it may therefore be concluded that it has also a choleric action. The author resorted to the therapeutic application of the substance in cases in which there were signs of abolished function of the gallbladder and also in hepatic disturbances. The treatment resulted in the rapid disappearance of hepatic pressure and in a better tolerance for foods particularly for those containing fat. Fat tolerance tests disclosed that the substance increased the resorption capacity for fats. Moreover the substance proved helpful also in pancreatic disturbances particularly diarrheas. In the therapeutic experiments the substance was usually administered by intramuscular injection (ampules of 2 cc) and was always well tolerated, however in the practical application it was given also in the form of tablets. Case histories indicate that the number of injections varied, some patients requiring only one or two and others six or more.

**Unusual Transmission of Infectious Disease.**—Schmoller describes the history of a boy aged  $3\frac{1}{2}$  who, after being bitten by a capricorn beetle developed severe tetanus with risus sardonicus and frequent convulsions. The administration of large doses of antitoxin as well as medication with magnesium sulfate and chloral hydrate effected a cure. In this connection the author calls attention to the fact that although it is generally known that some infectious diseases are transmitted by parasites, such a mode of transmission is almost never thought of in other infectious diseases. For instance it is hardly ever taken into consideration that syphilis may be transmitted by the bite of a flea. The reported case demonstrates that parasites may transmit infectious diseases that ordinarily are contracted in a different manner.

### Zeitschrift für Tuberkulose, Leipzig

74 81 160 (Nov.) 1935

\*Relations Between Exposure to Light and Reaction Time in Meinicke Tuberculosis Reaction and Its Use in Early Diagnosis. W. Berdel and K. Bühler—p. 81

Pleurisy and Pulmonary Tuberculosis. F. Hochstetter—p. 86

\*Significance of Lipoid Myelins in Sputum for Examination of Lung. A. Risi—p. 99

**Meinicke Tuberculosis Reaction.**—Berdel and Bühler employed Meinicke's seroreaction for tuberculosis in 150 cases, compared its results with those of the customary clinical, roentgenologic and nonspecific biologic methods of examination and found it to be superior. The stability of the reaction emphasized by Meinicke could be corroborated in case of exactly identical experimental conditions but it was disturbed when the conditions were changed, particularly by the irradiation of the patient the blood, the serum or the prepared reaction with light or roentgen rays. In the course of these studies it was observed that the serum contains a factor that inhibits the agglutination tendency of the antigen mixtures and (1) in healthy persons is more active than in patients and (2) in patients can be made inactive by irradiation with light or roentgen rays more readily than in healthy persons. The resulting acceleration of agglutination increases in the individual person according to the intensity of the irradiation, and in the various disorders it is the greater the more extensive and the more active the tuberculous process. This observation was utilized in the diagnosis of new cases of tuberculosis in which the Meinicke reaction as such is frequently negative as the result of a deficiency in antibodies. By the introduction of measured radiation into the reading modus of the microreaction and by the estimation of the reaction time, it proved possible to make the positive results recognizable in new cases in which the original method gave negative results. It was observed that the light and roentgen rays not only effect an acceleration of the agglutination but also even if not in the same measure change the agglutination titer of the reaction more to the positive side in tuberculous patients than in normal persons.

**Lipoid Myelins in Sputum.**—Risi investigated the quantitative changes of the myelin bodies in the various forms of tuberculosis. He made the first experiments on patients with active tuberculosis. Analysis of the sputum from the deeper passages revealed, in contradistinction to the negative aspects of the sputum, various myelin bodies and fluid crystalline forms. He thinks that this indicates degenerative changes in the local

fat and lipid exchanges. A degenerative and inflammatory pulmonary process existed no longer in the second group of patients but had already entered the stage of involution, and the optic examination of the sputum revealed an entirely different picture than in the first group. The myelin figures and the fluid crystals were absent. There was a predominance of the spherocrystalline forms and of the crystals that originate in the fatty acids. Fluid pseudocrystals were found rarely. In comparison with the first group, it seems justified that the crystal pictures should not be considered lipid fat but oil salts or ordinary fat. In the third group of experiments the author studied the nasal mucus of persons who were apparently healthy but who occasionally had nasal catarrhs. The results were partly positive and partly negative. In the first instance, lipid-like fluid crystals were detected and in the cases in which catarrh was present myelin figures were demonstrable, in the second instance there predominated, in case of a normal mucous membrane solid, doubly refracting crystals, that is, representatives of the fatty acids. These experiments demonstrate a reciprocal relationship between active disease processes (inflammation) and myelins. In the fourth and fifth groups of experiments the sweat and the tear fluid were examined. Myelins and fluid lipid crystals were found to be completely absent. However, there always were crystallites, microclites and solid crystals. The author concludes that the chemical and microscopic examination is capable of detecting myelins (fluid crystalline condition) that are readily differentiable from ordinary fats and their cleavage products. If this method is employed in the examination of lipid bodies in the sputum, it is possible to infer the condition and functional capacity of the lung.

### Sovetskaya Vrachebnaya Gazeta, Leningrad

Oct 15 (No. 19) pp 1481-1560 1935 Partial Index

\*Rectal Therapy in Inflammatory Gynecologic Diseases. G. M. Shpolyansky—p. 1496

Bacteriology of Uterus and Vagina in Postpartum Period. H. A. Smorodintsev, I. C. Vysotskaya and G. D. Derzhinskoy—p. 1504

Present Day Classification of Gonorrhea in the Female and Bordet-Gengou Reaction. B. A. Levina—p. 1511

Operative Treatment of Prolapse of Female Genitalia. I. I. Golodets—p. 1515

**Rectal Therapy in Inflammatory Pelvic Conditions.**—Shpolyansky states that there is no appreciable absorption of medicaments introduced in the vagina. Drugs introduced in the rectum are rapidly absorbed, thus gaining access to the general blood circulation and to the culdesac of Douglas. His experiments on absorption of iodine from the rectum demonstrated that, following its introduction in the rectum, the concentration of iodine in the posterior culdesac of Douglas increases. Apparently, iodine is retained in inflammatory foci. The author found that prolonged rectal administration of solutions of calcium chloride or of potassium iodide exerts a favorable effect on the local process and the general condition of the patient. Rapid elimination from the rectum makes it possible to apply this form of therapy in the acute stages of the disease. Introduction of salicylates in the acute stage results in a more rapid absorption of the exudate and a fall in temperature. The effect of calcium chloride is to aid in the rapid organization of the pelvic exudate and to restore the normal menstrual cycle. Calcium iodide favors a more complete absorption of old indurative processes in the pelvis.

### Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

70 5403-5534 (Nov. 23) 1935

Use of Local Anesthesia in Ophthalmology. E. Marx—p. 5404

Internal Rotation. H. Feikema—p. 5411

Clinical Symptoms of So-called Spontaneous Thrombosis of Superior Longitudinal Sinus. A. Biemond—p. 5422

Complications in Somnifen Treatment. V. W. D. Schenk—p. 5432

Ulcer of Bladder According to Hunner. P. M. E. P. Nyst—p. 5438

Diphtheria and Tonilllectomy. H. A. Rombach—p. 5439

**Spontaneous Thrombosis of Superior Longitudinal Sinus.**—Biemond reports two cases of so-called spontaneous thrombosis of the superior longitudinal sinus in a woman aged 35 and in a child aged 9 months in connection with a study of twenty-four cases recorded by other observers and all verified by necropsy. Symptoms of spontaneous thrombosis are headache, dulness, psychic disturbances, convulsions, eventual paralysis and dilatation of the veins and edematous swelling of the forehead and vertex. The author believes that the

process of thrombus formation is preceded by vessel wall changes, slowing of the blood current and changes in the composition of the blood. A probable diagnosis of thrombosis of the superior longitudinal sinus may be made if the following symptoms exist: (1) a predisposing factor, such as tuberculosis, chronic diseases of young children, syphilis, puerperium and carcinomatosis, (2) focal epileptic seizures, especially if they occur on one side of the face, (3) when a clear cerebrospinal fluid on the first lumbar puncture is followed on the next puncture by a bloody fluid under increased pressure, the flow being influenced by deep respiratory efforts, and, (4) though rare, dilatation of the veins and edematous swelling of the forehead and nosebleeds. Among differential diagnostic considerations the author mentions tumors, apoplexy, uremia, internal hemorrhagic and spontaneous pachymeningitis and arachnoidal hemorrhages, usually due to aneurysm. Not one of these diseases presents the combination of symptoms named. In the case of the much discussed subarachnoidal hemorrhages, epileptic attacks seldom and focal epileptic insults never occur, the symptoms are acute and the cerebrospinal fluid is immediately blood stained. The prognosis of sinus thrombosis is generally unfavorable. As treatment the author advocates repeated lumbar punctures to relieve increased pressure of the cerebrospinal fluid, intravenous injections of hypertonic salt solution to combat cardiac edema and all means of stimulating the general circulation.

### Acta Chirurgica Scandinavica, Stockholm

77 201:305 (Nov 15) 1935

Operative Treatment of Habitual and Permanent Luxation of Patella

Especially According to Krogus and Goldthwait O. Kapel—p. 201

\*Late Results of Embolectomy Performed on Arteries of Greater Circulation (Sweden 1913 to 1932) J. P. Strömbeck—p. 229

\*Pneumococcal Peritonitis C. K. Schaanning—p. 256

Results of Treatment of Medial Collum Femoris Fractures with Especial Reference to Osteosynthesis According to Sven Johansson Importance of Fracture Form for Consolidation K. Lehmann—p. 271

Further Studies on Luxation of Patella O. Kapel—p. 296

**Late Results of Arterial Embolectomy**—Strömbeck's report is based on observations in 327 operations for the removal of emboli from the arteries of the greater circulation, which were performed in Sweden between 1912 and 1932. He says that 63 per cent of the patients died in the hospital, but he did not investigate how soon after the operation death occurred nor did he determine in how many of these patients the circulation was restored before death. In fifty-nine instances (18 per cent) circulatory disturbances necessitated amputation, after which the patients could be discharged as improved. In the remaining sixty-one cases (19 per cent of the total) the circulation was intact after the embolectomy. Three fourths of the latter patients were alive one year after the operation, one half after three years, one third after five years and one eighth after ten years. The length of the survival period seems to depend particularly on the character of the cardiac defect and also on the age of the patients as well as on the more accidental factor of the danger of new emboli. There is a tendency toward cerebral circulatory disturbances (probably emboli in most cases) and emboli in the viscera and extremities long after the first embolism. The working capacity was best in those who had sufficient vitality to survive the procedure for a fairly long period. Among the patients who lived more than three years after a successful operation about 30 per cent enjoyed a rather good working capacity, while 20 per cent could not work at all. About 10 per cent of those who died in less than three years after operation were able to work rather well for some time but at least 70 per cent were quite incapable of working. The local result in the portion of the body operated on was in most cases quite good. Small areas of necrosis, sensory disturbances or peroneal pareses occurred in one eighth of the cases and mild subjective symptoms, such as numbness and paresthesia in about one half.

**Pneumococcal Peritonitis**—The material discussed by Schaanning was observed partly in clinical departments and partly in anatomic institutes. It comprises fifty-six patients: thirty-seven children and nineteen adults. In seven of the cases the peritonitis was more or less an accidental discovery in the course of the necropsy so that a preliminary clinical history is obtainable only in thirty-five children and fourteen

adults. The author stresses that pneumococcal peritonitis is not as rare as might be believed. In his own clinical material of children under 16 he found one case of peritonitis in eleven cases of acute appendicitis. The infection of the peritoneum can take place in various ways and may originate in different primary foci. The classic route, by way of the uterine tubes, seems to occur relatively seldom. In many cases it seems likely that infectious material has been swallowed and that the peritoneum has become infected by way of the intestine. One of the described cases indicates that hematogenous infection of the intestine is possible. Lungs and tonsils are frequently the primary foci of infection. A lymphogenous infection of the peritoneum from the lungs occurred in the reported material at least once and perhaps several times. There also were at least one or two instances of hematogenous dissemination from the lungs. The frequent detection of pneumococci in macroscopically intact peritoneum and the normal appearance of the diaphragm in patients dead from pneumonia indicate that the hematogenous infection of the peritoneum is comparatively frequent. The material gives no clues about the manner in which the infection takes place in cases that begin with tonsillitis. In patients with otitis media, the hematogenous route of infection must be considered most likely. The prognosis of pneumococcal peritonitis, as far as this material is concerned, was extremely unfavorable. All the adults died. In the children (below the age of 16 years) the mortality amounted to 31.43 per cent. During the first stage of the disorder the mortality is somewhat greater among those who were operated on than among those who were not. In view of this fact, the author thinks that it is advisable to wait with the operation until after the peritonitis has become localized. However, waiting long enough to risk a spontaneous perforation is inadvisable.

### Uppsala Lakareförenings Förhandlingar, Uppsala

41:1 189 (Oct 1) 1935

\*Tissue Oxidation in B<sub>1</sub> Avitaminosis and Inanition H. Rydin—p. 1

Air Pressure on Body Volume of Man. A. Kristenson—p. 183

**Tissue Oxidation in B<sub>1</sub> Avitaminosis and Inanition.**—Rydin treats mainly of muscle oxidation in pigeons having B<sub>1</sub> avitaminosis and inanition. Series of examinations of brain, kidneys, liver and blood corpuscles were carried out to make comparative studies of the different organs during these conditions. The microspirometer with Warburg and Bancroft's apparatus and Thunberg's methylene blue method were used. The avitaminosis was usually produced by feeding only polished rice. Comparison between the muscle oxidation in normal pigeons and those with B<sub>1</sub> avitaminosis showed lowered tissue oxidation in the latter, both with and without lactate in the suspension fluid. The musculature of pigeons with beriberi contained smaller amounts of one or several water soluble agents than normal musculature. The acute beriberi cases on application of the microspirometer disclosed more marked tissue oxidation than the chronic cases. Inanition, produced by insufficient administration of food with abundant vitamin B<sub>1</sub> in such quantity that the body weight decreased correspondingly to that of the avitaminotic pigeons, resulted in a lowered muscle oxidation. Comparative experiments in normal, avitaminotic and underfed pigeons showed parallel results in the avitaminotic and underfed pigeons. The author concludes that the reduced tissue oxidation in B<sub>1</sub> avitaminosis is due to undernourishment of the muscles. Vitamin B<sub>1</sub> apparently indirectly influences muscle oxidation. Vitamin B<sub>1</sub> is believed to exert a specific effect on the tissue oxidation of the brain. His results indicate that the weak tissue oxidation of the kidneys is caused by inanition, but since evidence is recorded showing that the lowered tissue oxidation is specific for B<sub>1</sub> avitaminosis, this question calls for continued investigations along other lines. There was little difference in the tissue oxidation in liver substance of normal, avitaminotic and undernourished pigeons. By heart punctures the oxygen consumption of the blood corpuscles in a given pigeon was studied at different times during B<sub>1</sub> avitaminosis; it was less than under normal conditions. Experiments in underfed pigeons indicated that this reduction depended on undernourishment. Comparison between results in use of the microspirometer and of the methylene blue methods showed frequent but not constant agreement.

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## BACTERIAL MENINGITIS

### A COMPARATIVE STUDY OF VARIOUS THERAPEUTIC MEASURES

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NEW ORLEANS

There are comparatively few conditions that offer the clinician more formidable problems than do the various types of bacterial meningitis. It is true that the diagnosis of inflammations of the meninges does at times tax diagnostic acumen, but repeated examination of the spinal fluid will, in most instances, clarify the situation. However, the major problems and those which cause the greatest concern are such as pertain to treatment. Many authors, at various times, have suggested different forms of therapy, this alone indicates that the therapeutic management of meningitis has been far from satisfactory. Even the cases of cerebrospinal fever, for which are employed rather potent specific antisera and antitoxins, result in many fatalities.

The records of all cases of bacteria-incited meningitis treated in the Charity Hospital during the last ten years have been reviewed in order to determine the distribution of the etiologic types, the various therapeutic procedures employed and the end results. During the last several years it has been my privilege either to institute therapeutic measures in such cases at the Charity Hospital directly or else to observe their use by my colleagues. A total of 468 such cases (table 1) were diagnosed during that period. For simplicity of presentation, the cases have been classified on the basis of bacteriologic manifestations and will be discussed on the same basis.

### CEREBROSPINAL FEVER

Two hundred and twenty-one of the cases were cerebrospinal fever (acute epidemic cerebrospinal meningitis) with a mortality of 65.15 per cent. Except those in which death occurred shortly after admission, all patients received polyvalent antimeningococcus serum by some route. The antimeningococcus serums employed were prepared by five commercial biologic laboratories, the mortality rate was uninfluenced by the type of serum used.

Chart 1 shows the distribution of the cases of cerebrospinal fever on the basis of age, sex and color. In general, the disease was severer and the mortality higher in babies and young children. With older persons the prognosis was decidedly more favorable.

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The author is indebted to Drs. G. S. Bel, J. H. Musser and J. G. Stubbs for their kind permission to include in this series the cases assigned to their services.

Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

*Therapeutic Management*—Six different methods of treatment (table 2) were employed, serum administration was the basis of five of these. Most of the patients treated by drainage through simple lumbar tap were moribund on admission and died immediately thereafter. The high mortality rate among cases so treated should therefore not be considered a true index of the efficacy of the method.

Most patients were treated by intravenous, intramuscular and intraspinal injections of serum after withdrawal of as much spinal fluid as possible. Usually the amount of serum given intraspinally was from 10 to 15 cc less than the amount of fluid withdrawn. Serum injections were repeated at intervals of from twelve to twenty-four hours. This method is rather simple. With it, however, no attempt is made to maintain the normal spinal fluid pressure, and it is difficult for the serum to reach the ventricles, not to mention the more important cerebral subarachnoid spaces. At autopsy the latter spaces in a large number of the cases so treated were found to be filled with purulent exudate, particularly those over the frontal lobes. True, some of the serum injected intravenously does finally reach the ventricles and cortex of the brain, but it is so diluted as to lessen considerably whatever therapeutic value it may have.

Because of these disadvantages, serum in fifty-four cases was injected intracisternally as well as intraspinally, the two procedures being alternated every twelve to twenty-four hours. The mortality of the cases so treated was 48.14 per cent. In five cases the intracisternal route alone was used, owing to the presence of a spinal subarachnoid block. All these patients died.

The Lyon<sup>1</sup> "substitution" method of administering serum was used in two cases. With this method, by means of a combined ventricular and lumbar puncture, antiserum containing a phenolphthalein indicator is permitted to flow into the ventricle as the spinal fluid escapes from the lumbar needle until the serum appears at the lumbar site. Both children so treated died of toxemia. Autopsy revealed no evidence of hemorrhage and surprisingly little reaction of the brain substance traversed by the needle in reaching the ventricle.

Because of the difficulties of the Lyon method, a simple modification, retaining its basic principle, was sought. This method, for convenience, is called the "modified substitution" method. Briefly, its technique is as follows:

With the patient lying on his side and the head of the table elevated about 9 inches, a needle is introduced into the basal cistern and another into the lumbar cistern. The spinal fluid is then allowed to flow from

<sup>1</sup> Lyon, G. M. Serum Therapy in Meningococcus Meningitis. *Am J Dis Child*, 43: 572-576 (March) 1932. The Administration of Serum in Meningitis. *South M J*, 25: 818-825 (Aug.) 1932.

both needles. Usually the flow from the basal cistern ceases first. As soon as this occurs, and while the fluid still flows from the lumbar tap, the antiserum, heated to body temperature and containing a few drops of Dandy's phthalein indicator, is allowed to flow into the basal cistern. The table is then immediately lowered

TABLE 1—Incidence of Bacterial Meningitis in Charity Hospital 1925-1934 Inclusive

| Type  | Number of Cases | Per Cent of Total | Deaths | Mortality Rate |
|---|-----------------|-------------------|--------|----------------|
| Meningococcus (N intracellularis)                             | 221             | 47.20             | 144    | 65.15%         |
| Pneumococcus (D pneumoniae)                                   |                 |                   |        |                |
| Type I  | 8               | 1.70              |        |                |
| Type II   | 2               | 0.42              |        |                |
| Type III  | 8               | 1.00              | 110    | 80.00%         |
| Type (?)  | 90              | 19.23             |        |                |
| Tuberculous (M tuberculosis hominis)                          | 51              | 10.89             | 51     | 100.00%        |
| Streptococcus viridans  | 3               | 0.64              |        |                |
| Streptococcus haemolyticus                                    | 2               | 0.42              | 22     | 91.66%         |
| Streptococcus type (?)  | 19              | 4.05              |        |                |
| Haemophilus influenzae  | 20              | 4.27              | 20*    | 100.00%        |
| Staphylococcus aureus   | 4               | 0.85              | 9      | 100.00%        |
| Staphylococcus type (?)                                       | 5               | 1.06              |        |                |
| Bacillus pyocyaneus (Pseudomonas aeruginosa)                  | 4               | 0.85              | 3      | 75.00%         |
| Mixed staphylococci type (?) and H influenzae                 | 1               | 0.21              | 1      | 100.00%        |
| Mixed pneumococci type (?) and H influenzae                   | 1               | 0.21              | 1      | 100.00%        |
| Purulent bacterial meningitis (type of organism not reported) | 26              | 5.50              | 26     | 100.00%        |
| Total number of cases..                                       | 468             |                   |        |                |

\* One of these patients with influenzal meningitis following a pan-sinusitis apparently recovered and was discharged. Six months later another attack occurred and the patient died soon after admission. Autopsy was not permitted.

so that the foot is elevated 6 inches higher than the head, the serum continuing to flow into the cistern until it fills the ventricles and appears at the lumbar tap. From 50 to 80 cc of antiserum is usually given intravenously, and from 50 to 100 cc intramuscularly at the same time. Nineteen successive cases were treated by this method, the mortality rate (42.10 per cent) being lower than that with any other treatment method.

TABLE 2—Results of Various Types of Serum Therapy in Cases of Cerebrospinal Fever

| Type of Serum Therapy   | Number of Cases | Died | Recovered | Mortality Rate |
|---|-----------------|------|-----------|----------------|
| Simple lumbar drainage  | 14              | 14   | 0         | 100.00%        |
| Lumbar drainage with repeated injections intraspinally intravenously and intramuscularly      | 130             | 57   | 43        | 66.92%         |
| Repeated injections intraspinally and intracranially  | 54              | 26*  | 25        | 48.14%         |
| Only two or three injections by combined lumbar and external puncture (modified substitution) | 19              | 8*   | 11        | 42.10%         |
| Repeated injections intracranially alone because of spinal block                              | 5               | 5    | 0         | 100.00%        |
| Repeated injections into ventricles by combined ventricular and lumbar punctures              | 2               | 2    | 0         | 100.00%        |

\* In four of a total of thirty-four cases, at autopsy the basal cistern was found filled with clotted blood. In all cases serum was also given intravenously and intramuscularly.

Naturally, no definite conclusions can be drawn from such a small series.

The temperature records of three typical cases of varying severity are presented in charts 2, 3 and 4 illustrating the effects of this method of serum administration.

It would appear that this method is simpler and requires less experience than the original "substitution" method and consequently should be attended with less

danger. However, the difficulty usually encountered is that of performing the cistern puncture. Even with faultless technic, one or two vessels of the small plexus present in the roof of the cistern may be ruptured, resulting in rather extensive intracisternal hemorrhage. This occurred in four of the cases, and at autopsy blood clots not only filled the cistern but had dissected around the anterior surface of the medulla. Certainly this added medullary compression presented a contributory, if not the actual, cause of death.

In order to avoid this danger as far as possible, special attention was given to the size and bevel of the

TABLE 3—Results of Various Therapeutic Procedures in Bacterial Meningitis (Exclusive of Cerebrospinal Fever)

| Type of Therapeutic Procedure*  | Type of Infection  | Number of Cases            | Recovered                  |
|---|--|----------------------------|----------------------------|
| Modified "substitution" using polyvalent antimeningococcus serum via combined lumbar and basal cistern puncture             | Strep type (?)<br>Staph type (?)<br>Pneumo type I<br>Pneumo type III<br>Pneumo type (?)<br>B pyocyaneus (P aeruginosa) | 5<br>3<br>2<br>1<br>4<br>1 | 1<br>0<br>0<br>1<br>0<br>1 |
| Modified substitution using anti meningococcus serum as above also intracranial injection of Pregis solution of iodine      | Strep viridans<br>Pneumo type (?)<br>Strep type (?)  | 1<br>3<br>4                | 1<br>0<br>0                |
| Modified substitution as above also intracranial injection of Pregis solution of iodine and acridine 1% solution            | Pneumo type (?)<br>Strep type (?)  | 3<br>1                     | 0<br>0                     |
| Complete substitution using anti meningococcus serum via combined ventricular and lumbar puncture                           | Pneumo type (?)  | 2                          | 0                          |
| Permanent and forced drainage of basal cistern (Haynes operation) in pneumococcal case, type I anti serum given I V and I S | Pneumo type I<br>H influenzae  | 1<br>1                     | 0<br>0                     |
| Antipneumococcus serum type I I V and I S   | Pneumo type I  | 3                          | 0                          |
| Polyvalent antipneumococcus serum I V I O and I S   | Pneumo type (?)  | 17                         | 0                          |
| Paenmococcus immunogen I S  | Pneumo type (?)  | 2                          | 0                          |
| Ethylhydrocupreine hydrochloride orally and I S   | Pneumo type (?)  | 2                          | 0                          |
| Covalent serum I S and I M  | H influenzae   | 2                          | 0                          |
| Metaphen (10 cc. 0.1% solution) I V   | H influenzae   | 1                          | 0                          |
| Mercurochrome (20 cc 1% solution) I V and I S   | Strep type (?)   | 2                          | 0                          |
| Polyvalent streptococcus antiserum I V and I S  | Strep type (?)   | 2                          | 0                          |
| Hexylresorcinol (10 cc 0.1% solution) I S   | Pneumo type II<br>Pneumo type (?)  | 1<br>1                     | 0<br>0                     |
| Simple lumbar drainage Also all other cases of bacterial meningitis   | H influenzae   | 1                          | 0                          |

\* I. O. Indicates intracranially I. S. intraspinally I. V., intravenously I. M. intramuscularly  
† Immediate death

‡ Patient had five recurrent attacks of meningitis each following pansinusitis. Haemophilus influenzae found during fourth attack. Patient recovered completely after this attack but died six months later after fifth attack.

needles used. However, even with needles specially constructed, intracisternal hemorrhages occurred.

Recently, Danna<sup>2</sup> has replaced infected spinal fluid with air in cases of bacterial meningitis other than cerebrospinal fever. He seats the patient in an upright position, and as the spinal fluid is withdrawn from the lumbar cistern in quantities of 10 cc he replaces it with air. It seemed that antiserum in cases of cerebrospinal fever might be similarly administered with advantage. Accordingly, after the spinal fluid was replaced with sterile air the buttocks of the patient were raised and the air was replaced with antiserum. The procedure is simple and from the results obtained in a few cases appears to offer considerable promise.

Encouraging indeed is Hoyne's<sup>3</sup> report of considerable reduction in the mortality rate following the use of antitoxin prepared by Ferry,<sup>4</sup> as compared to that obtained with antiserum. I have instituted a comparative study of antitoxin and antiserum administered by various methods. The results will be reported later.

#### OTHER TYPES OF BACTERIAL MENINGITIS

Unfortunately, these types of meningitis are so frequent and their end results so uniformly fatal that recovery usually warrants special reports. Always of particular interest, naturally, is the therapeutic method employed in any case in which recovery has occurred, and throughout the literature numerous reports may be found advocating different types of treatment.

Neal<sup>5</sup> and Williams<sup>6</sup> have reported satisfactory results following the use of experimental specific antisera in some cases caused by organisms of the pneumococcus, streptococcus and *Haemophilus influenzae* groups. Unfortunately, such antisera are not generally available. Their need, if preliminary reports are confirmed, is obvious.

The work of Kolmer<sup>7</sup> and Stewart<sup>8</sup> in the treatment of such cases occurring spontaneously in human beings or induced experimentally in animals embraces not only the use of a wide variety of chemotherapeutic and serologic agents but also different drainage methods. These results are undoubtedly encouraging and stimu-

As shown in table 1, 247 of the cases observed were caused by organisms other than the meningococcus. These cases were treated by different methods, involving the administration of various specific and nonspecific serums and chemical agents, with various means of

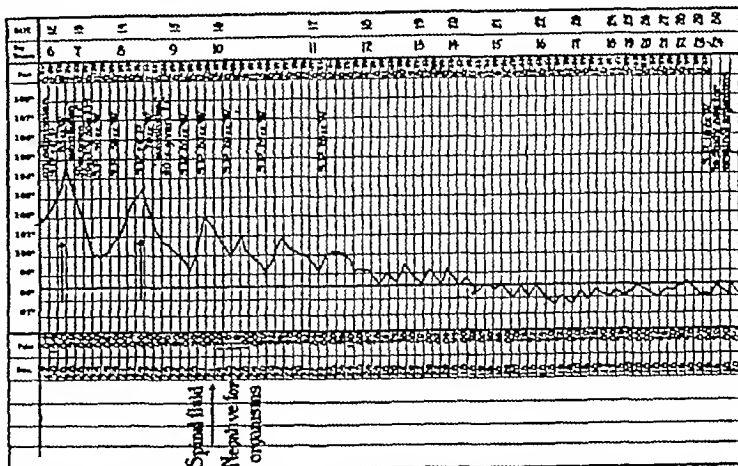


Chart 2—Cerebrospinal fever. In this and the following charts C, P indicates basal cistern puncture; S, P, lumbar cistern puncture; I, M, intramuscularly; I, V, intravenously; I, S, intraspinal; W, spinal fluid withdrawn; substitution, modified substitution. The arrows on the base line indicate injections of antiserum.

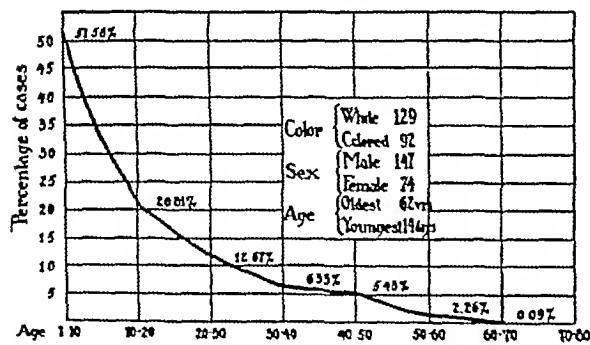


Chart 1—Distribution of cases of cerebrospinal fever according to age, sex and color.

lating but lack of frequency and uniformity of recoveries following any method advocated is indeed disappointing.

3. Hoyne A. L. Meningococcal Meningitis. *J. A. M. A.* 104: 980 (March 23) 1935.
4. Ferry N. S. Meningococcus Antitoxin. I. Prophylactic and Therapeutic Tests on Guinea Pigs. *J. Immunol.* 23: 315 (Oct.) 1932.
11. Therapeutic Tests on Monkeys. *ibid.* 23: 325 (Oct.) 1932.
- Further Tests on Monkeys. *ibid.* 26: 133 (Feb.) 1934.
5. Neal Josephine B., Jackson H. W. and Appelbaum Emanuel. Influenza Meningitis. Study of 111 Cases with Four Recoveries. *J. A. M. A.* 102: 513-518 (Feb. 17) 1934. A Comprehensive Study of Meningitis Secondary to Otitis or Sinus Infection. *Ann. Otol. Rhin. & Laryng.* 43: 658 (Sept.) 1934.
6. Williams Anna W. Bacteriology of Meningitis Following Otitis Media and Related Infections. *Ann. Otol. Rhin. & Laryng.* 43: 667-671 (Sept.) 1934.
- (a) Kolmer J. A. The Intracranial Method of Treatment of Meningitis with Recoveries. *J. A. M. A.* 96: 13: 1361 (April 25) 1931.
- (b) New Methods for the Prophylaxis and Treatment of Meningitis with Special Reference to Streptococcus and Pneumococcus Meningitis. *Laryngoscope* 42: 1233 (Jan.) 1932.
- (c) The Chemotherapy and Serum Therapy of Pneumococcus and Streptococcus Meningitis. *I. Arch. Otolaryng.* 3: 481 (June) 1926.
- (d) Kolmer J. A., Rule Anna M., and Madden Bernard V. The Cerebral-Cisternal Spinal Lavage Method of Treatment for Septic Meningitis. *ibid.* 9: 423 (April) 1929.
8. Stewart F. W. The Production Pathology and Treatment of Type I Pneumococcal Meningitis in Dogs. *J. Exper. Med.* 46: 409 (Sept.) 1927.

drainage. These therapeutic measures will be briefly discussed.

1. *Simple Lumbar Drainage*—One hundred and eighty-one cases of bacterial meningitis were treated by this method, with recovery in only one case, caused by *Haemophilus influenzae*.

2. *Intraspinal Administration of Chemical Agents*—Ethylhydrocupreine hydrochloride, metaphen, mercuriochrome and hexylresorcinol were used in seven cases, with no recoveries. Four deaths occurred so quickly after administration of the chemical that it was deemed inadvisable to treat any other case in this manner.

3. *Specific and Nonspecific Serums and Vaccines in Pneumococcal Meningitis*—Pneumococcus immunogen repeatedly injected intraspinal was used in two cases. Polyvalent antipneumococcus serum was repeatedly administered intraspinal, intracisternally and intravenously in seventeen cases. Antipneumococcus type I serum was given intravenously and intraspinal in three cases of type I infection. All patients so treated died. Quite striking were the severe serum reactions, sometimes causing death, observed with many.

4. *Permanent and Forced Drainage of Basal and Lumbar Cistern*—Kubie<sup>9</sup> pointed out the advantage of forced drainage. He reported recovery in five cases so studied, in three of these, however, no organisms were demonstrable in smear or culture. Haynes<sup>10</sup> and Dandy<sup>11</sup> recorded several cases in which recovery followed this type of therapy. Spurling<sup>12</sup> also reported success following drainage instituted by laminectomy. The two cases in this series so treated ended fatally.

5. *Surgical Drainage of Focus, Replacement of Spinal Fluid by Nonspecific Serum With and Without Intracisternal Injection of Chemical Agents*—As emphasized by many authors, the value of surgical

9. Kubie, L. S. Forced Drainage for the Treatment of Meningitis Secondary to Ear and Sinus Infections. *Ann. Otol. Rhin. & Laryng.* 43: 692-701 (Sept.) 1934.
10. Haynes I. S. The Surgical Treatment of Meningitis. Its Scope and Accomplishment. *Laryngoscope* 22: 865-912 1912.
11. Dandy W. E. Treatment of Staphylococcus and Streptococcus Meningitis by Continuous Drainage of the Cisterna Magna. *Surg. Gynec. & Obst.* 39: 760 (Dec.) 1924.
12. Spurling R. G. The Surgical Treatment of Meningitis, with Report of Cases. *Kentucky M. J.* 26: 242 (May) 1928.



drainage of foci of infection is obvious. Whether or not removal of the infected cerebrospinal fluid and its replacement with nonspecific serum or another fluid as a form of subarachnoid lavage<sup>13</sup> is beneficial may be conjectured. However, although it is probable that immune bodies are present in the spinal fluid and its replacement by nonspecific immune serum removes these immune substances, still the mechanical removal

three doses. Spinal drainage by lumbar taps was done at twelve-hour intervals to keep the spinal fluid pressure as near normal as possible. A total of from 4,000 to 5,000 cc. of 10 per cent dextrose and saline solutions was given daily. Thirteen days after admission, no organisms were demonstrable in the spinal fluid.

In sixteen cases, polyvalent antimeningococcus serum was administered by the "modified substitution" method, after surgical removal of the focus. No intracarotid injections were given. Three of the patients recovered. The salient features are herewith recorded.

H C, a white youth, aged 16, admitted with meningitis, showed nonhemolytic streptococci in the spinal fluid. Blood cultures remained sterile. At the time of admission and again at the end of four days, combined cistern and lumbar punctures were done as described, and the spinal fluid was replaced by polyvalent antimeningococcus serum. During the interim, a daily total of from 4,000 to 5,000 cc. of 10 per cent dextrose and saline solution was given orally, intravenously and subcutaneously. Lumbar taps were done every twelve hours to maintain the spinal fluid pressure as near normal as possible.

The day after the second administration of serum the spinal fluid was negative for organisms, and ten days after admission the patient was on the road to recovery.

H H, a Negress, aged 32, was admitted with the diagnosis of chronic recurrent appendicitis. An appendectomy was performed under procaine hydrochloride spinal anesthesia. Six days later the patient complained of severe backache, headache, nausea and vomiting. Opisthotonos was present, accompanied by exquisite tenderness over the third lumbar vertebra. Spinal and cisternal fluids revealed type III *Diplococcus pneumoniae*. By means of combined basal cistern and lumbar punctures, the spinal fluid was replaced with polyvalent antimeningococcus serum, as in the previous cases. This was repeated on the

of the bacteria by lavage may be of distinct value. As suggested by Felsen and Osafsky,<sup>13</sup> nonspecific serum increases phagocytosis and inhibits the growth of organisms. Be that as it may, several reports<sup>14</sup> have appeared of recovery in nonmeningococcal cases of meningitis following the use of polyvalent antimeningococcus serum alone or in conjunction with other specific serums. Kolmer<sup>15</sup> showed that Pregl's solution of iodine or acriflavine may be advantageously injected into the common carotid or internal carotid arteries in such cases. Ersner and Myers<sup>16</sup> noted experimentally that, although intracarotid injection traumatized the artery, no permanent injury resulted. It is reasonable to assume that in addition to their bacteriostatic property such chemical substances may stimulate phagocytosis. All four cases in which 1 per cent acriflavine solution was so used ended fatally. Only one of eight cases in which Pregl's solution of iodine in addition to nonspecific serum was used ended in recovery.

H G, a white girl, aged 12 years, presented a clinical picture of meningitis following left otitis media, which had been treated by means of incision and drainage of the tympanic membrane at onset. Spinal fluid examination showed *Streptococcus viridans*. Blood culture was negative. Mastoidectomy was performed and all cells were removed. The left common carotid artery was exposed, and 10 cc. of warmed Pregl's solution of iodine was slowly injected. Intracarotid injections were repeated on two succeeding days. Combined cistern and lumbar puncture, and a modified substitution method of drainage using polyvalent antimeningococcus serum were performed, and repeated every five days for

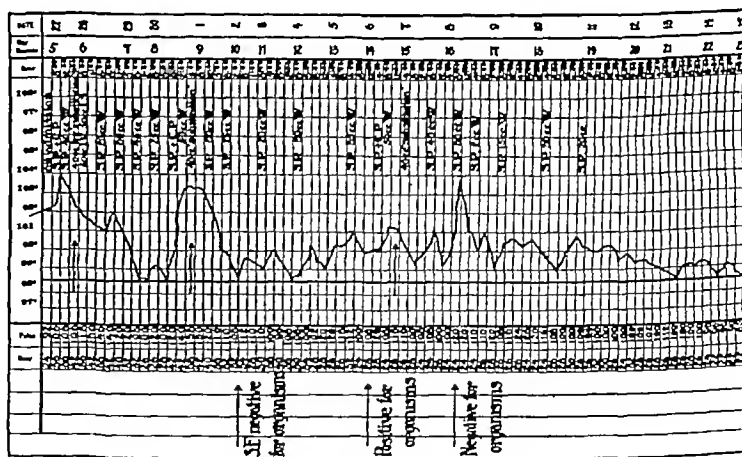


Chart 4—Cerebrospinal fever

fourth, eleventh and fourteenth succeeding days. Twenty-nine days after the onset of meningitis, recovery was complete.

H M, a white man, aged 20, on admission complained of severe headache and fever. Illness had begun six days previously with pain and tenderness in the left ear and mastoid region. The left ear presented a purulent discharge. Patellar reflexes were exaggerated and the Kernig and Babinski signs were positive on both sides. Cultures from the spinal fluid revealed *Pseudomonas aeruginosa* (*Bacillus pyocyaneus*). Mastoidectomy was done and polyvalent antimeningococcus serum was given by a combined lumbar and basal cistern puncture. Four days after the operation, the spinal fluid was sterile.

13 Felsen Joseph, and Osafsky A G. *Streptococcus Viridans Meningitis with Recovery*. Immunologic Studies. J. A. M. A. 102: 2170-2171 (June 30) 1934.

14 Rennie, J. K., and Craig W. A. Case of Streptococcal Meningitis. Lancet 1: 524 (March 11) 1933. Ebert E. Un cas de meningite purulente à streptocoques suivie de guérison. Acta oto-laryng. 15: 104-105 1931.

15 Ersner M. A. and Myers David. Changes Noted in the Carotid Following Intracarotid Therapy. Tr. Am. Laryng. Rhin. & Otol. Soc. 33: 377-387 1933.

# BACTERIAL MENINGITIS—TRIPOLI

## SUMMARY AND CONCLUSIONS

1 A review and comparative study of the therapeutic regimen employed in 468 cases of bacterial meningitis treated in the state Charity Hospital of Louisiana at New Orleans during the period 1925-1934 revealed that the mortality rate for cerebrospinal fever was 65.15 per cent and for other types of bacterial meningitis 98.38 per cent

a partial block, and I was attempting to wash it away with a sodium chloride solution. I pressed a little more vigorously and withdrew the syringe more quickly than I should, and the patient died right there and then. Although his heart kept on for two or three minutes after he stopped breathing, nothing could bring him back. This is an ever present danger in treatment by the method Dr Tripoli finds most satisfactory in the handling of patients with meningitis. I have had one of the house officers in three instances attempt a permanent cisternal drainage. Unfortunately the patients were moribund when the operation was performed. Two of them died immediately and one died shortly afterward. I can't help but feel, however, that that particular method should be employed more than it is. I believe that in some institutions at the present time that particular technic is being carried out in the treatment of the patient with meningitis. Invariably the patient who recovers is the patient who has a remarkable freedom from the encephalitic symptoms. If a child comes into the hospital ward in active delirium, it is going to die. If a child comes in with a clear mentality, it has an excellent chance for recovery.

Dr. JOSEPHINE B. NEAL, New York. It seems to me that it has not been sufficiently emphasized that there is real danger in doing a cisternal puncture on a patient suffering from meningitis. That danger does not exist, at least to anything like the same degree, in a patient suffering from cerebrospinal syphilis. When a patient is suffering from meningitis the meninges are much congested and there may be a thick purulent exudate in the region. I have been told of probably twenty-five or thirty instances in which death has followed and been due to cisternal punctures in the hands of competent physicians, so that I am shocked when I go into hospitals and find that cisternal punctures are done by house doctors who have had no experience on the cadaver. While cisternal punctures should be done when they are indicated, I think they should not be resorted to lightly. In discussing cerebrospinal fever, Dr Tripoli and I didn't see why there was a much higher

2 Numerous methods of specific antiserum administration have advantages and disadvantages

3 The value of antiseptic chemical agents in bacterial meningitis, other than cerebrospinal fever, is believed to be limited to bacteriostasis and stimulation of phagocytosis

4 The newer therapeutic methods described and their suggested modifications constitute attempts at overcoming the dangers and supplementing the inadequacies of the older methods

5 The therapeutics of bacterial meningitis is generally unsatisfactory. In four cases other than cerebrospinal fever, treatment by spinal lavage with nonspecific serum and eradication of primary foci of infection was successful

## ABSTRACT OF DISCUSSION

Dr. JOHN H. MUSSER, New Orleans. After observing the results obtained in the patients we have had at Charity Hospital, it is with a good deal of skepticism that I believe that intensive treatment does very much for patients who have meningitis. I think it perfectly possible that very often they might recover merely with lumbar drains, and on the other hand there are certain patients for whom nothing can be done. A young man after playing baseball ate a healthy supper and then had a headache. In two hours he was unconscious and twelve hours later he was dead. A young woman lay in a hospital for ten weeks with a fever of undetermined origin until somebody thought that she possibly might have a meningeal infection. A lumbar tap was done and it was found that she had cerebrospinal meningitis. She recovered with one or two lumbar taps. It so happened that when she had her meningitis she also was pregnant and she gave birth to a child a few months later. It does seem that very little can be done in spite of all forms of treatment in the bacterial types other than the meningococcus. One of the recognized dangers of the combined cisterna-lumbar puncture is the danger of cerebellar herniation. Years ago I was attempting to treat a Negro patient who was getting along nicely. As is well known in pneumococcal meningitis there is

case fatality in New Orleans than in New York. Whether there is a different type of organism in New Orleans that is not sufficiently well represented in the serum I do not know. The method employed at several hospitals in New Orleans in treating meningitis is to give serum only intraspinally unless we are sure that a septicemia is present in which case serum is given intravenously as well. We usually do not give serum intraspinally oftener than once a day. If block does occur and it is in a young child we resort to ventricular puncture rather than cisternal for two reasons. It is safer and it is surer, since the block may quite as well be above the cistern as below it. In the treatment of other forms of bacterial meningitis any method of treatment that does not seem to promise

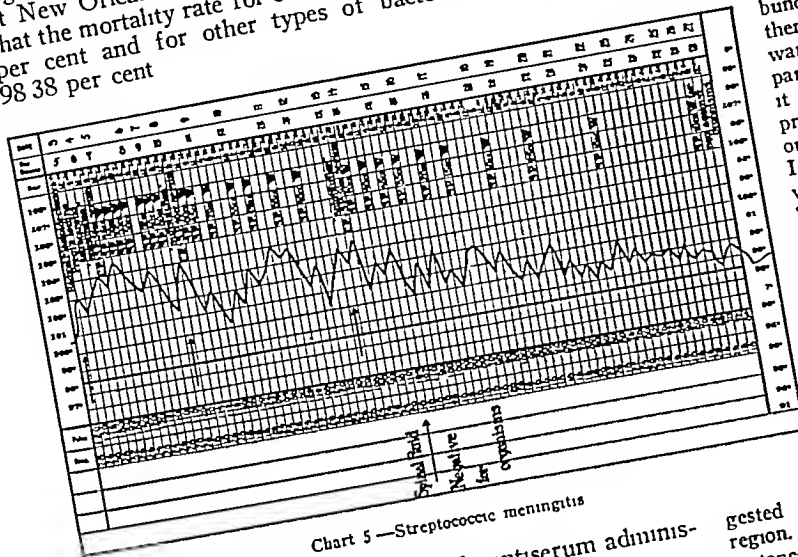


Chart 5—Streptococcal meningitis

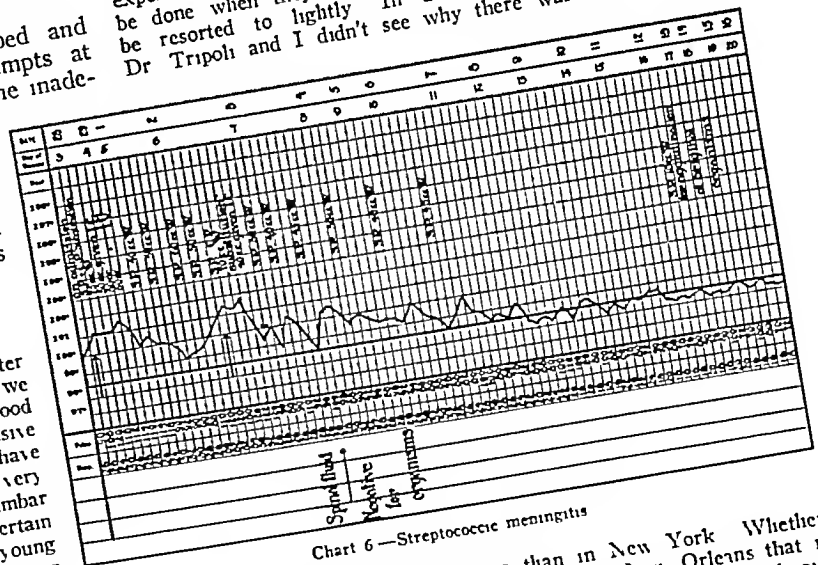


Chart 6—Streptococcal meningitis

receding days. Tumor recovery was complete on admission complained of illness had begun six days in the left ear and nose. Purulent discharge. Patient Kernig and Babinski signs. (Bacillus pyocyaneus) basal cistern

actual harm to the patient is justified. Quite a few patients with various forms of bacterial meningitis have recovered—I think twelve cases of streptococcal meningitis and five due to the influenza bacillus. I thought there were two reasons why these patients recovered. One was that the infecting organism was fortunately of a rather low degree of virulence, and the other that the focus of infection was eradicated surgically or else subsided spontaneously. Perhaps the only two cases in

taining some 300 or 400 cells, practically all lymphocytes. Clinically it looked like a case of tuberculous meningitis. Spinal fluid obtained by the next puncture contained no tubercle bacilli and the fluid showed a normal amount of sugar, and I realized that it was a case of lymphocytic meningitis. So the prognosis was changed and the patient recovered. There were at that time, in Chicago, I understand, perhaps half a dozen cases of that kind, some of them starting quite severely, all with lymphocytosis and normal sugar content, with recovery in all.

DR. ALFRED GORDON, Philadelphia. With regard to the treatment of meningitis, I wish to relate the result of treatment in influenzal meningitis in four cases which I have had within the last two years. Two patients died and two recovered. One, a girl of 16, had some nasal condition of long duration, there was fluctuation in improvement and aggravation of symptoms. Finally, at the end of the sixth week, she developed acute symptoms, which were very striking. All sorts of remedies had been tried by other men, particularly the nose and throat men, without any results. The patient was getting worse, the temperature was rising alarmingly, and particularly the disproportion and lack of parallelism between the degree of temperature and the pulse were unusually severe, and this is usually fatal. I instituted lumbar drainage. At first 5 cc. of fluid was removed three times a day, but immediately following the same quantity of physiologic solution of sodium chloride was injected. This procedure continued for two weeks. Encouraged

by slight improvement, I increased the drainage to 10 cc, followed by 10 cc of the sodium chloride solution. In the two cases, in which the treatment was absolutely identical, the result was unusually favorable.

DR. CARLO J. TRIPOLI, New Orleans. Acute encephalitic manifestations are not infrequently present in our cases of cerebrospinal fever. Dr. Musser stated that the presence of encephalitis in addition to meningitis in these cases is usually of serious prognostic importance. This observation is worthy of note, as the mortality rate is considerably higher in the cases so affected. As Dr. Neal suggests, there may be considerable difference between the organisms infecting our cases and those represented in the antiserum. Certainly, the organ-

which I felt rather sure that the treatment was of value, except for repeated lumbar punctures and rather thorough draining, were two in which the streptococcal meningitis followed scarlet fever. In these cases the antiscarlatinal serum was used, and I thought we had a right to assume that it may have had a specific effect.

DR. R. GLEN SPURLING, Louisville, Ky. Of the first ten pyogenic meningitis cases (other than meningococcal) treated with constant drainage, recovery occurred in four. As a result of this experience, I was most enthusiastic about the method. During the last five years, some fifty cases have been thus treated with only two recoveries. The incidence of recovery from pyogenic meningitis with continuous drainage would seem, therefore, to be relatively low. Theoretically, and I believe practically, there is some virtue in this method of treatment. There are so many factors to be considered in each case, particularly the virulence of the organism, the resistance of the patient, the completeness with which the primary focus can be eradicated and, most important of all, the duration of meningeal symptoms, that the incidence of recovery in a large series may not be an accurate index to the value of the method in any particular case. Those cases in which I have seen recovery occur have all been very early ones or cases in which the primary focus could be thoroughly eradicated. Whether recovery would have occurred without constant drainage is problematic. I have always used drainage at the lumbar subarachnoid space through an indwelling cannula. This small flanged cannula can be placed between the third and fourth vertebrae with but little more trouble than inserting a lumbar puncture needle. Drainage through such a cannula can be kept going for many days. There is one virtue in continuous drainage which I believe makes the method worth while, even though its curative effects may be negligible. Certainly the patients who are given continuous drainage are kept much more comfortable than those in whom repeated lumbar puncture is resorted to; their headache is diminished, their clouded mentality usually clears, and they seldom die in convulsions. If for no other reasons I believe that the method is worth while.

DR. PETER BASSOE, Chicago. Last fall I was called to see a girl aged 16 years, whom I found in bed, vomiting, with severe headaches, temperature of 104 and the spinal fluid con-

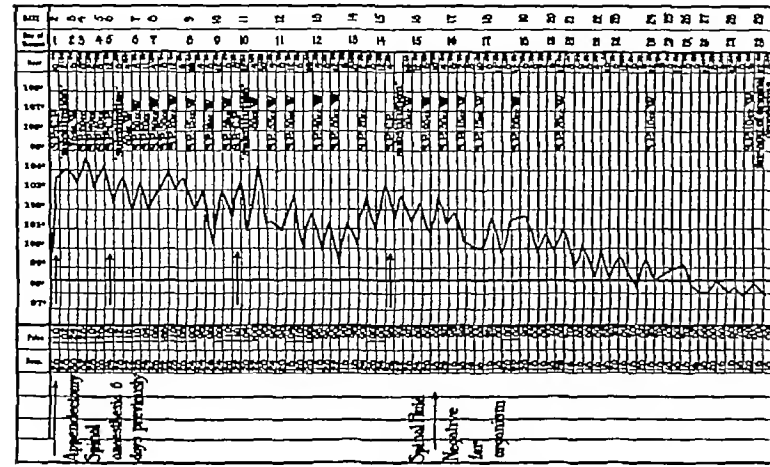


Chart 7—Pneumococcal (type III) meningitis

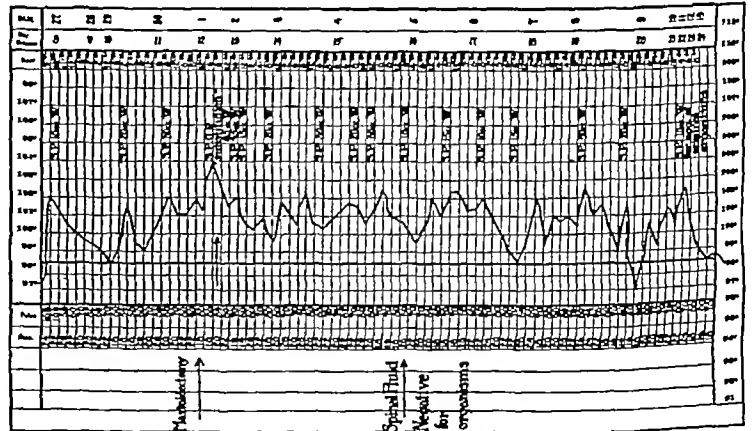


Chart 8—Bacillus pyocyaneus (*Pseudomonas aeruginosa*) meningitis

isms from various cases in each vicinity should be typed more specifically. Many strains have been isolated by the bacteriologists. Testing and incorporation of these strains in the manufacture of antiserum and antitoxin should be of distinct value. Increasing the spinal fluid drainage by forced fluid intake is quite advantageous in all types of bacterial meningitis. Dilution and mechanical removal of bacteria and their toxin are thereby facilitated. However the value of operative procedures to facilitate drainage in cases of bacterial meningitis other than cerebrospinal fever remains to be proved.

# PROTAMINE INSULINATE—HAGEDORN ET AL

In a compound of this type the insulin should act as an acid, while in insulin hydrochloride it acts as a base

## CHEMICAL INVESTIGATIONS

In order to realize this idea, different groups of substances have been tried, kryn, histones, globins and protamines, but only the last mentioned group has given such solubility results that a clinical experiment has been found justified

The knowledge of the protamines is rather old Miescher, as early as 1868, produced salmine Later on a number of protamines were produced (especially Kossel<sup>1</sup> and his co-workers) and their chemical constitution is now on the whole well known Their properties as protein precipitants were first observed by Kossel, about 1890

The protamines are divided into three groups, mon-protamines, diprotamines and triprotamines, according to their contents of one, two or three of the basic constituents lysin, arginine and histidine A study of compounds between triprotamines and insulin is in progress, but on account of the difficulties in obtaining raw material no definite results are available so far One compound of insulin and diprotamine (cyclopterin) has been investigated and proved to be far more soluble than the monoprotonamine compounds, on which, therefore, our work has been concentrated

Chart 1 shows the solubility of compounds of insulin and different protamines prepared from the ripe sperm of the fish in question The amount of the various protamins that combines with the insulin is about one-tenth the weight of the latter The insulin

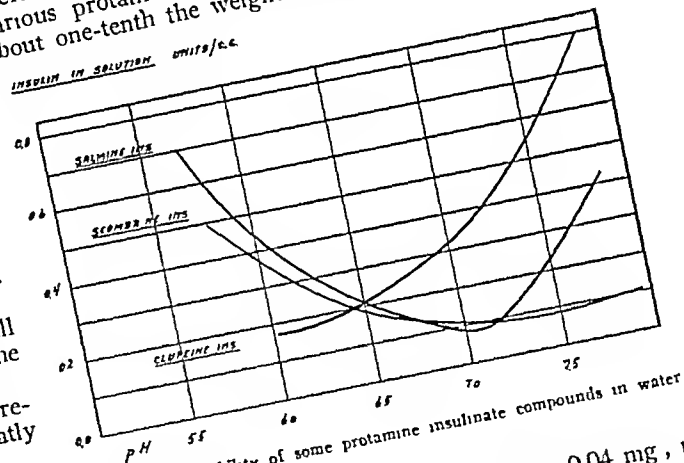


Chart 1—Solubility of some protamine insulinate compounds in water at different pH

used was of purity As one unit is about 0.04 mg, it appears from the figure that the solubility in water is of the same order of magnitude as that of barium sulfate

An experiment carried out on a normal person showed no ill effect after far larger doses of clupeine than would be used by the insulin treatment and therefore a clinical experiment was made on a diabetic patient with the insulin clupeine compound in clear slightly acid solution, but without any effect different from that of ordinary insulin This negative result is undoubtedly due to the proteins of the tissue fluid acting as protecting colloids and thus preventing the precipitation Another experiment was made in which the reaction of the protamine insulinate solution was adjusted before injection to pH 7.3, whereby the pro-

<sup>1</sup> Kossel, Albrecht, The Protamines and Histones New York Longmans Green & Co 1928

From the Sieno Memorial Hospital  
1. Leyton, O The Administration of Insulin in Suspension Lancet  
2. Clau en Oral communication to the authors

## PROTAMINE INSULINATE

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N. B. KRARUP, M.D.  
AND  
I. WODSTRUP

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When treating diabetes with insulin, one has to replace the regulated continuous secretion from the normal pancreas into the portal vein by a few daily injections into the subcutaneous tissue This method is of course only a poor imitation of nature's own mechanism Serious disturbances are avoided only because the organism has other means of regulating the blood sugar than to vary the rate of insulin secretion This is the reason why treatment with one or two injections daily is found to give fairly good results in many cases In more severe cases, however, very pronounced oscillations of the blood sugar may occur During the last few hours before the injection metabolic disturbances develop, which tend to minimize the available deposits of carbohydrate, strongly needed when the blood sugar runs low after the injection

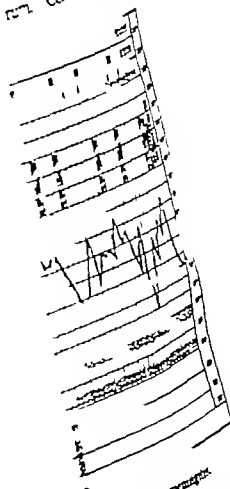
It is obvious that the insulin hydrochloride will rapidly become absorbed into the blood after the injection If the rate of absorption could be retarded, the aforementioned difficulties might possibly become greatly reduced

In order to obtain such a retardation, different ways have been tried

1. Injecting the insulin as a suspension or emulsion in oil or similar substances, e.g., Leyton<sup>1</sup> in 1929
2. Injecting it together with vasoconstrictor substances (experiments in the Deaconess Hospital, Boston<sup>2</sup>)
3. Injecting an insulin compound, sparingly soluble in the tissue fluid

The third method has been tried through several years in this institute but without success until experiments made for other purposes indicated that a compound of insulin and nucleic acid had a more acid iso-electric zone than insulin itself According to this experience it appeared that it might be possible also to combine the insulin with some basic group, so that the combination might get its iso-electric zone nearer to the pH of the tissue fluid than the insulin hydrochloride

Perhaps, with the advent of more specific antisera and antitoxins, the procedure will become more valuable The diagnostic and prognostic value of spinal fluid dextrose and chloride determination has been pointed out on several occasions A recent paper by Drs Musser and Watkins regarding the prognostic influence of spinal fluid dextrose determinations in cases of cerebrospinal fever illustrates these observations quite well The great difference between the mortality rate in cases of cerebrospinal fever in our locality and elsewhere may be accounted for, in part, by the fact that many patients are not taken to the hospital in the early stages of the disease. The Charity Hospital of Louisiana receives patients from the entire state The patients are frequently treated at home for some time and then subjected to strenuous travel before being brought to the hospital for treatment. Although this fact probably does influence the mortality rate, I do not believe it to be wholly responsible.



21 aerogenesis aerogram  
vicinity should be typed and been isolated by the bacteriologist. These strains in the antitoxin should be of distinct drainage by forced A-I all types of bacteria and the of bacteria and the of operation

tamine insulinate is precipitated. As the result of the compound being injected as a suspension, the deposit in the subcutaneous tissue consists of a fluid of practically constant insulin concentration, from which the absorption takes place, and a steadily diminishing

As the relative error of the biologic assay is the same whether the quantity of insulin to be estimated is large or small, the experiments are carried out in such a way that the quantity of undissolved precipitate is small, whereby the most exact results are obtained.

Recently a protamine not described before in the literature, prepared from the sperm of *Salmo iridius*, has been investigated. The insulin compound has shown the hitherto lowest solubility in serum. Therefore we now use this protamine in the clinical experiments.

#### CLINICAL INVESTIGATIONS

During more than two years about eighty-five patients have been treated with protamine insulinate in the Steno Memorial Hospital. They have represented all age classes and cases of every degree of gravity, yet most of the cases were severe and several of them presented different complications. In addition to careful examination during their stay in the hospital, the condition of the patients has also been followed after they were dismissed.

During their stay in the hospital, generally for about four weeks, the blood sugar was examined as a matter of routine, five times every day: fasting at 7 a. m., at 11 a. m., at 2 p. m., at 5 p. m. and at 10 p. m., the insulin injections generally being given at 8 a. m. and at 6 p. m. By means of numerous controls it has been proved that these five determinations make it possible to form a good picture of the

amount of solid particles. In this way a distinct prolongation of the time of absorption was observed. After having had this experience, we tested the different monoprotaamines in the same way.

As a result of these preliminary experiments it was found that the insulin protamine compounds appeared to be more soluble in tissue fluid than in water. In order to investigate this more closely, a series of solu-

#### Solubility of Some Insulin Protamine Compounds in Serum and Serum Dilutions

|  | Per cent Minimum Solubility | Insulin in Solution Units per Cc |                            |
|--|-----------------------------|----------------------------------|----------------------------|
|  |                             | Diluted Serum 23% Protein        | Undiluted Serum 8% Protein |
|  |                             |                                  |                            |
| Cinpelne                               | 0.3                         | 18                               | 55                         |
| Seombrine                              | 7.3                         | 17                               | 51                         |
| Salmine                                | 7.3                         | 14                               | 50                         |
| New compound from <i>salmo iridius</i> | 7.3                         | 6                                | 33                         |

bility experiments was carried out on different insulin protamine compounds in serum and serum dilutions.

The solubility in serum has been determined by shaking an exactly known quantity of the recently precipitated protamine insulinate with a suitable volume of human serum for half an hour at 37 C. The mixture was centrifugated and the undissolved part was taken up in a known volume of acidified water. In the acid solution the contents of insulin are determined. The solubility is calculated from the difference between the original and the undissolved quantity, as shown in the table.

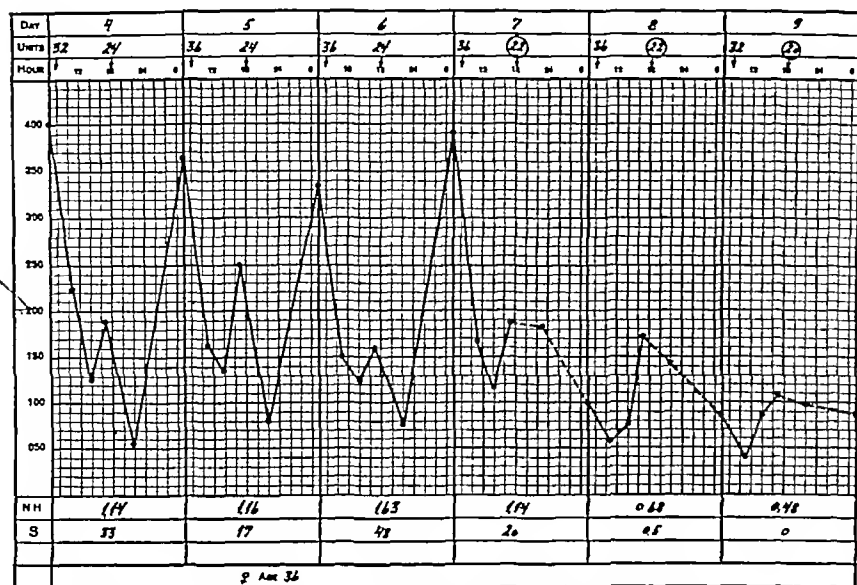


Chart 2—Transition from a period in which the patient was treated with ordinary insulin to a period in which the patient was treated with protamine insulinate. Protamine insulinate was given on the last three days in the diagram. Explanation of this and the following diagrams. At the top are indicated the days of treatment concerned. Below is the insulin dose in international units. A circle round the figure indicates that protamine insulinate has been used. Under this an arrow marks the time of the injection. In the coordinate system the blood sugar is given in percentages. A broken line means that protamine insulinate has been used. Below the coordinate system is the ammonia excretion in grams per twenty four hours and at the bottom the sex and age of the patient.

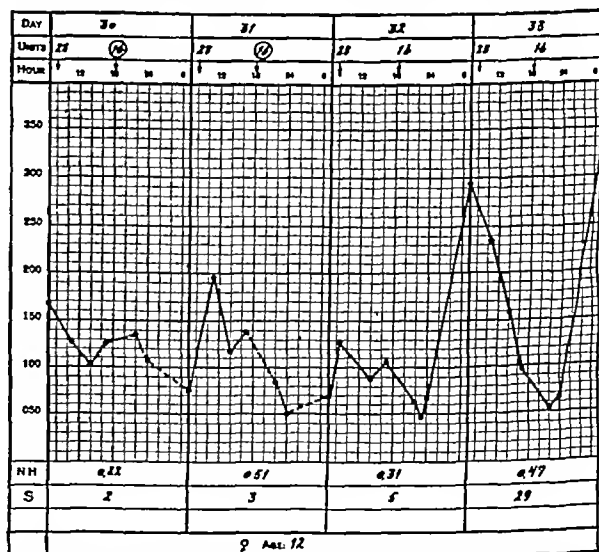


Chart 3—Transition from a period in which the patient was treated with protamine insulinate to a control period in which the patient was treated with ordinary insulin. Protamine insulinate was given on the first two days shown in the diagram.

oscillations of the blood sugar during the day. Yet they often have been supplemented with twenty-four hour curves on the basis of blood sugar determinations every two hours. All determinations were made on



capillary blood by titration according to the ferricyanide method (Hagedorn-Jensen)

In addition, the daily sugar excretion was regularly determined. As an indicator of fluctuations in the acidosis, the ammonia excretion in the urine was also followed every day.

All together, more than 15,000 blood sugar determinations and 3,000 determinations of sugar and ammonia in the urine form the basis of the present communication.

The patients treated have been on a diet with an average of about 2,300 total calories, individually modified according to the calculated standard metabolism (Du Bois) of every patient. The diet contains about 100 Gm of carbohydrate and 70 Gm of protein. Of the carbohydrates about 40 per cent are given at breakfast (8 a. m.), about 40 per cent at lunch (11:30 a. m.) and about 20 per cent at dinner (5:30 p. m.).

The test of the effect of the protamine insulinate has been made by comparing periods in which the patients were treated with ordinary insulin, with periods in which, under exactly the same conditions otherwise, they were treated with protamine insulinate.

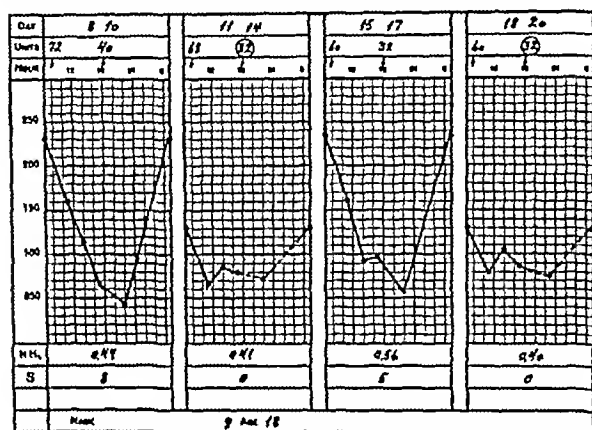


Chart 4.—Four periods in succession. The values represent the average from each period. Protamine insulinate was given in the second and fourth periods.

By alternation, control periods were obtained from the patients themselves.

These investigations have shown that the sharp peak effect, usually seen three or four hours after the injection of ordinary insulin, is largely avoided by the use of protamine insulinate. Furthermore, the effect of protamine insulinate is more prolonged—roughly about twice as long as that of ordinary insulin. Without increasing the number of injections, we can by this means diminish the blood sugar fluctuations, reduce or suppress the glycosuria and reduce the ammonia excretion, and at the same time reduce the risk of the occurrence of hypoglycemia.

We have never observed any ill effects. The injection is painless, there is no local reaction, and protein reactions do not occur. We have never observed any failure of the insulin effect. The effect seems to be the same whether the patients stay in bed or are out of bed. It has been as effective in children as in grown-up persons. The administration as a suspension has never given rise to difficulties or inconvenience. In acute conditions (coma) ordinary insulin is of course to be used as it works faster.

When the treatment with ordinary insulin gives satisfactory results, the use of protamine insulinate is of no special value.

We have been able to relieve all patients completely of feelings of uneasiness due to acidosis or high blood sugar without giving more than two injections daily. The hypoglycemic insulin reactions have been fewer, and when there has been hypoglycemia the symptoms

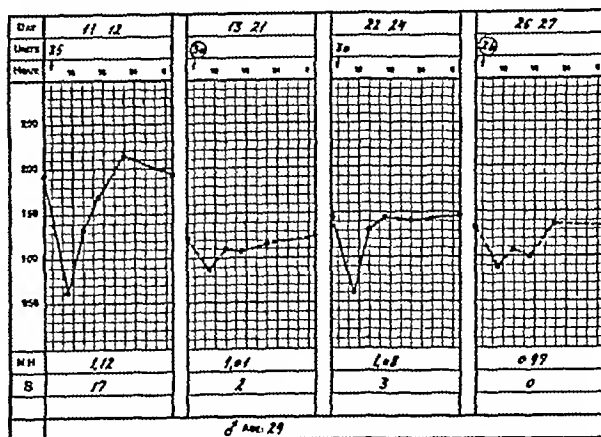


Chart 5.—A mild case, treated with only one injection every twenty-four hours. Four periods in succession. The values represent the average from each period. Protamine insulinate was given in the second and fourth periods.

always have appeared gradually, so that the patient has been well aware of the situation and has been able to provide against it. The treatment by protamine insulinate has proved very adequate and effective with regard to complications. Especially we have noted good results in cases complicated by neuritis and enlargement of the liver in young patients.<sup>4</sup>

In the discharged patients, especially the children, it was found to be easier to maintain the regulation by treatment with protamine insulinate.

In accordance with the more steady course of the blood sugar at night and its more irregular course

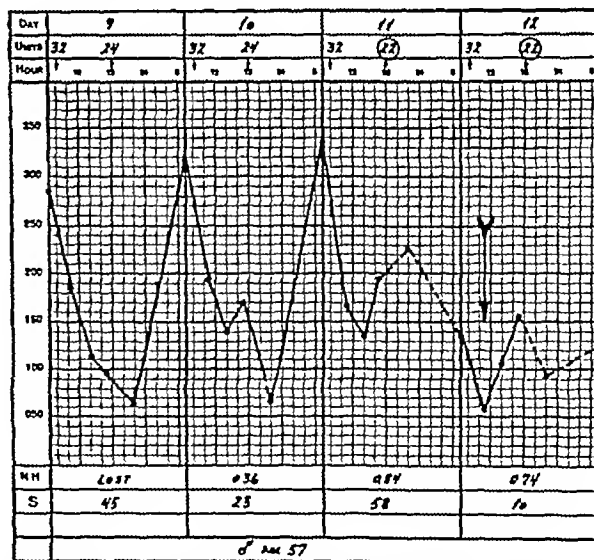


Chart 6.—Showing how an insulin reaction may occur (the fourth day shown in the diagram at 11 a. m.) if the morning dose is not reduced when protamine insulinate was given the night before.

during the day, the smoother and more protracted effect of protamine insulinate has proved especially useful at night, and we have observed further that, when ordinary insulin is given in the morning after

4. Hans en P. Enlargement of the Liver in Diabetes Mellitus, to be published.

protamine insulinate in the evening, the ordinary insulin will in most cases be much less violent in its effect, because it is given at a moment when the organism is in fairly good balance and the blood sugar fairly low. With ordinary insulin in the morning under these circumstances we can generally avoid the larger fluctuations in the blood sugar throughout the day.

Thus, we have usually obtained the best results by giving the patients ordinary insulin in the morning and protamine insulinate in the evening. Still, there remain some cases in which the result will be the best with protamine insulinate both morning and evening. Then it usually pays to give the injections at equal intervals, say at 8 a. m. and 8 p. m.

Chart 2 is an example among many of the effects of the protamine insulinate when used that way. It shows how under treatment with ordinary insulin the blood sugar fluctuations remain wide, the fasting blood sugar lying between 300 and 400 mg., despite the fact that the evening injection could not be increased without the risk of hypoglycemia. The ammonia excretion was considerable and there was much glycosuria. On turning to protamine insulinate treatment the situation changed entirely: the blood sugar fluctuations were smoothed out, the fasting blood sugar became normal, the ammonia excretion fell, and the urine became free from sugar, while at the same time the subjective condition of the patient improved considerably. The effect is not always so immediate as in this case. Sometimes it will last a few days (maximum observed five) until the full effect stands out.

Chart 3 shows in exactly the same manner transition from protamine insulinate treatment to treatment with ordinary insulin in a control period. In spite of the doses being exactly the same, the blood sugar fluctuations and glycosuria at once became large when ordinary insulin was given in the evening.

The cases illustrated in charts 2 and 3 were both rather severe, in which of course protamine insulinate is specially indicated. But also in lighter cases it has done good service, as shown in chart 4. This diagram has been drawn on the basis of average calculations of four periods. Protamine insulinate was given in the second and fourth periods.

Furthermore, we have successfully used protamine insulinate in several cases in which it was possible to treat the patient with fairly satisfactory results with one injection of ordinary insulin every twenty-four hours but in which it was found that the subjective condition improved under the protamine insulinate treatment, because this ensures a considerable leveling of the course of the blood sugar curve, eliminating the rapid onset of hypoglycemia (compare chart 5) and the consequent sensations of hunger and weakness so common in the forenoon, while at the same time it combats the tendency toward glycosuria, which is due to the effect of ordinary insulin diminishing so quickly.

In many cases it is possible to do with a smaller dose of protamine insulinate than of ordinary insulin. This is no doubt due to better utilization, which is also well known when one large dose of ordinary insulin is replaced by a number of small doses. In spite of this, it has proved beneficial in certain instances, especially in cases in which only one injection every twenty-four hours is given, to give a rather larger dose of protamine insulinate. In these cases the better utilization of the preparation is balanced by the possibility obtained of satisfying the insulin requirement more completely without risking hypoglycemia.

A single point concerning the dosage is noteworthy. In some cases so great a change will be produced by giving protamine insulinate in the evening that the fasting blood sugar, instead of being for instance 300 to 400 mg., will suddenly drop down to normal or even lower values, in which cases it will often be necessary to reduce the morning dose of ordinary insulin by 10 or 20 per cent.

In the case shown in chart 6 we have purposely omitted this and kept the morning dose unchanged, with the result that a slight insulin reaction occurred, where the arrow is shown on the diagram. In any case this is a matter that requires attention.

A full report of the details of the clinical investigations will be published shortly.

## CLINICAL EXPERIENCE WITH PROTAMINE INSULINATE

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ALEXANDER MARBLE, MD  
AND  
ELMER H. STOTZ, BS  
BOSTON

Wide fluctuations in the level of blood sugar, with marked hyperglycemia on the one hand and hypoglycemia ("insulin reactions") on the other, represent one of the chief difficulties in the treatment of severe diabetes with insulin. One thinks of the pancreas of the normal individual as adjusting its secretion of insulin according to the need of the body at any given time. The subcutaneous injection of relatively large amounts of insulin two, three or four times daily thus differs considerably from the physiologic process. Consequently there may occur large and sudden fluctuations in glycemia, particularly in those insulin-sensitive patients in whom the blood sugar is unusually labile. Insulin reactions, or the possibility of such, particularly during the night, are often a source of much worry both to the patient and to his family.

Accordingly, it was with much interest that we learned a few months ago that Dr. H. C. Hagedorn and his associates, working at the Steno Memorial Hospital<sup>1</sup> in Copenhagen, had succeeded in developing a preparation of insulin the use of which enabled one to avoid to a great extent marked fluctuations in blood sugar. During the course of the past summer two of our group (H. F. R. and P. W.) visited Dr. Hagedorn's laboratory and clinic. He showed them the results he had obtained and generously gave us sufficient material for clinical trial with our own patients.

## THE NATURE OF PROTAMINE INSULINATE AND METHOD OF ADMINISTRATION

The theoretical considerations and the studies that led up to the preparation of protamine insulinate have been outlined by Hagedorn in his preliminary report<sup>2</sup> and in the accompanying article.<sup>3</sup> By combining the

<sup>1</sup> The expenses of these studies were defrayed in part by a grant from the Chemical Foundation.  
<sup>2</sup> From the George F. Baker Clinic, Elliott P. Joslin, M.D., medical director, at the New England Deaconess Hospital.

<sup>3</sup> The Steno Memorial Hospital is a twenty-two bed research institution adjoining the Nordisk Insulin Laboratorium in which is produced Danish Leo insulin. Both the hospital and the insulin laboratory are administered by a board composed of outstanding Scandinavian scientists with Dr. Hagedorn as the director. The Nordisk Insulin Laboratorium was chartered by the King of Denmark as a charitable institution and the profits from the manufacture of insulin are used to further investigation.

<sup>4</sup> Hagedorn, H. C., Jensen, B. N., Krarup, N. B., and Wodstrup, I. Protamine Insulinate, this issue, p. 177.

usual insulin hydrochloride (in solution,  $p_H \approx$  about 2.5) with a protamine derived from the sperm of a species of trout, *Salmo iridus*, a compound is formed which has its point of minimum solubility at  $p_H$  7.3, or at about the reaction of blood serum. After the subcutaneous injection of a turbid suspension of protamine insulin, the compound is slowly broken down and the active insulin released over a relatively long space of time, thus allowing for an even and more prolonged effect on the blood sugar.

We have obtained from Dr Hagedorn vials containing 5 cc. of Danish Leo Insulin of U-40 strength.<sup>4</sup> Before using, one adds, in sterile fashion, to a given vial 1 cc. of a solution containing the protamine and sodium phosphate (for buffer effect). The vial is shaken before each withdrawal of insulin. The syringe used for the actual injection is of the usual type. To prevent coagulation of the protein material the syringe must be cool when used.

We have observed no noteworthy local or general reactions following the use of protamine insulin, although some patients have stated that slightly more discomfort attends the injection than when ordinary insulin is used.

TYPE OF ACTION

Hagedorn states that the blood sugar lowering effect of the protamine insulin lasts roughly twice as long

as diabetes. All are patients who have been troubled to a greater or less degree with severe insulin reactions. The ages of the patients range from 4 to 59 years, although eight of them are under 20. Eight are males and seven females. Our procedure has been patterned after that outlined by Dr Hagedorn. Patients have spent from one to three weeks in the hospital,

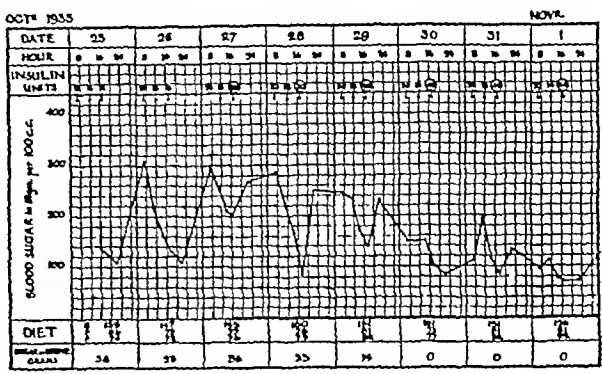


Fig. 2—A girl aged 18.7 years had had diabetes for 23 years. The control curve obtained on October 25 and 26 shows the wide fluctuations seen when regular insulin was employed. Note the high fasting blood sugars and the tendency to low values at 10 p. m. After use of protamine insulin for three days stabilization with minor fluctuations in blood sugar was secured. Note the decrease in glycosuria. In this and subsequent charts all doses of protamine insulin are enclosed in circles. The period of administration of protamine insulin is indicated by a heavy line at the bottom of the blood sugar chart.

during which time they have received a weighed diet. Daily qualitative tests for urine sugar have been made during the day at intervals of two or three hours from 6:30 a. m. to 9:30 p. m. Qualitative tests for sugar and diacetic acid or acetone have been made daily on a portion of the mixed twenty-four hour collection, when sugar has been found, the percentage has been determined by a modification of Benedict's procedure.<sup>5</sup> Determinations of the blood sugar (capillary) have been made at 7 and 11 a. m. and at 2, 5 and 10 p. m. daily, Folin's method being used.<sup>6</sup> Nine of the patients have been allowed to continue the use of the protamine insulin at home following hospital stabilization.

In all cases in which the protamine insulin has been used there has been unmistakable evidence as to

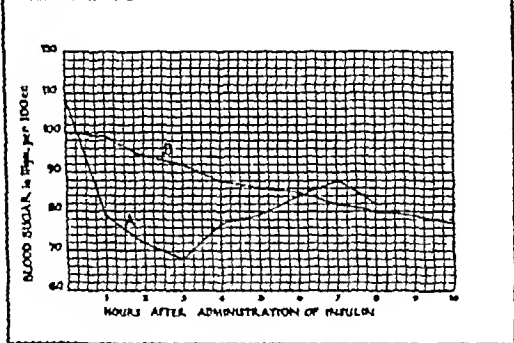


Fig. 1—Miss M. G., 25 years of age, normal nurse-dietitian. Curve A, October 23, shows the effect of 8 units of regular insulin (Lilly) given subcutaneously. Curve B, October 25, shows the effect of 10 units of protamine insulin. Note the gradual steady fall in blood sugar in the latter curve. In each case the insulin was given immediately after the first blood sample was taken.

as that of regular insulin. This is borne out by our experience. With our own patients in the hospital, where because of institutional routine the evening dose of insulin is usually given shortly after 5 o'clock, the effect of this dose of protamine insulin is regularly demonstrable by a blood sugar determination taken at 7 a. m. on the following day, fourteen hours later.

The type of action secured is well illustrated by the blood sugar curves obtained with a healthy normal young woman in whom the effects of regular insulin and of the protamine insulin were compared. The insulin in each instance was given after an overnight fast, and no food was taken during the course of the tests.

THERAPEUTIC STUDIES WITH PATIENTS

So far we have used the protamine insulin in fifteen patients who with one exception, have severe

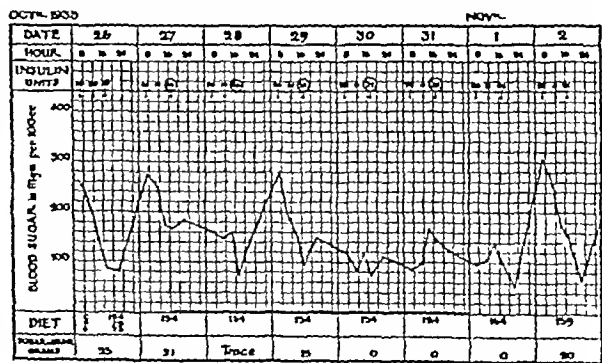


Fig. 3—A woman aged 26.9 years had had diabetes for 16.1 years. A period of use of protamine insulin was preceded and followed by control periods during which regular insulin was employed.

its more prolonged effect. With the new preparation, a normal fasting blood sugar is readily obtained. In general, our results have confirmed those reported by the Danish investigators. Charts 2 and 3 are cases in

<sup>4</sup> It will be noted that in the preparation of the protamine insulin 1 cc. of the protamine-buffer solution is added to 5 cc. of insulin. Hence U-40 insulin is reduced in strength to U-33. To avoid confusion however we have used the resulting protamine insulin as if it were still of U-40 strength. Accordingly all doses of protamine insulin stated in this paper must be multiplied by  $\frac{40}{33}$ . Prof. C. H. Best has kindly informed us that the unit of insulin as now used in Denmark differs slightly from that in America. On this basis all doses of protamine insulin mentioned in this paper would be further multiplied by  $\frac{40}{33}$ .

<sup>5</sup> Smith, M. A. Micro Modification of the Method of Benedict for the Quantitative Determination of Reducing Sugar in Urine. *J. Lab. & Clin. Med.* 7:364 (March) 1922.  
<sup>6</sup> Folin, Otto and Malmros, H. An Improved Form of Folin's Micro Method for Blood Sugar Determinations. *J. Biol. Chem.* 83:115 (July) 1929.

point In both cases two or three days of adjustment of dosage of the protamine insulinate was required before the desired effect was secured The results were striking, however, on both the blood and urinary sugar In the accompanying charts it will be noted that both patients received a noon dose of

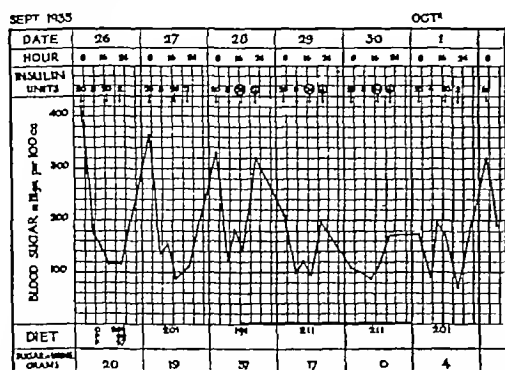


Fig 4—A boy aged 16 1/2 years had had diabetes for 8 1/2 years. Note the striking difference both in blood sugar and urinary sugar during the three days when the protamine insulinate was used. On the final day regular insulin was substituted and again a low blood sugar at 10 p m and a high blood sugar at 7 a. m. on the following day resulted

(regular) insulin. Possibly because of the relative shortness to date of the period of observation and of use of the protamine insulinate, we have been unable to dispense with the noon dose for those patients whose diabetes is severe enough to require under ordinary circumstances three or four doses of insulin. Our experience suggests that time and continued use may allow better stabilization on a smaller number of units and on two doses of insulin a day, as has been Hagedorn's experience.

#### EFFECT OF DIET

The diets in use in Hagedorn's clinic contain on the average about 100 Gm of carbohydrate. The diets used in our patients included from 130 to 241 Gm of carbohydrate. We have been interested, therefore, to find that the protamine insulinate is effective despite the more liberal intake of carbohydrate. This is illustrated in chart 4.

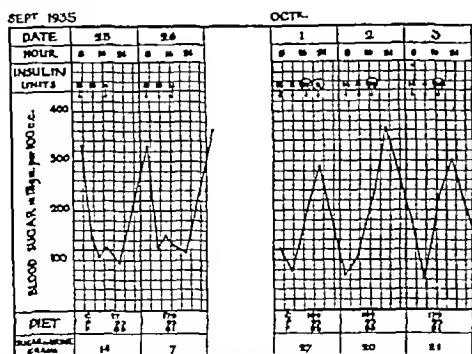


Fig 5—A boy, aged 14 1/3 years had had diabetes for 10 1/2 years. This chart illustrates one of the difficulties encountered with some patients in the use of the protamine insulinate. On the left is a control curve showing the high fasting values when regular insulin was used. On the right is the curve for three days during which protamine insulinate was given. Note that although normal or subnormal fasting values were obtained those at 10 p m were high and glycosuria was slightly more pronounced.

Another difference exists between the diets in current use in America and in Denmark. In Hagedorn's clinic the division of carbohydrate between the three meals is  $\frac{2}{5}$ ,  $\frac{2}{5}$ ,  $\frac{1}{5}$  as contrasted with our practice of apportionment  $\frac{1}{3}$ ,  $\frac{2}{3}$ ,  $\frac{2}{3}$ . Obviously a smaller task

is imposed on the before-supper dose of protamine insulinate when the smallest meal of the day is given at this time. We too have had our best results when our diets were rearranged to provide the smaller supper. Otherwise, because of the lack of immediate and powerful action on the part of the protamine insulinate, in the evening and earlier part of the night the blood sugar may be higher than one wishes and considerable glycosuria may result. This effect is well shown in chart 5.

Here it is evident that with the protamine insulinate the end result was a reversal of the usual blood sugar curve of the patient with severe diabetes receiving insulin. That is, instead of extreme hyperglycemia at 7 a. m., normal or subnormal values were obtained. Instead of a tendency to low values at 10 p m., high values were the rule, apparently because of the inability of the more slowly acting protamine insulinate to cope completely with the amount of carbohydrate given at the evening meal. Dr Hagedorn suggests as an added factor the possibility that in some patients the insulinate may be absorbed with unusual slowness. Giving the evening dose as early as 3 or 4 p m. may in such cases be advantageous.

This effect may by no means be a disadvantage, however. The average juvenile diabetic patient or his

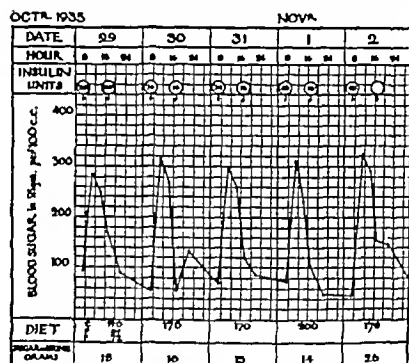


Fig 6—A boy aged 48 years had had diabetes for 21 years. This curve shows an unsuccessful attempt to use the protamine insulinate exclusively. Note that when the dosage was increased in an attempt to control daytime hyperglycemia and glycosuria the delayed effect of the insulin given was sufficient to cause marked hypoglycemia several hours later. This patient later did well with protamine insulinate substituted for only one (evening) dose of insulin.

family will retire at night in a much more comfortable state of mind if the bedtime test shows that the urine contains a small amount of sugar, particularly if it is known that almost surely the rising specimen on the following morning will be sugar free.

#### TIMES OF INJECTION

Hagedorn and his associates have ordinarily given a dose of regular insulin in the morning and a dose of protamine insulinate in the evening. They state that usually one does not secure as satisfactory results if both doses are of the new preparation. The difficulty arises again because of the inability of the protamine insulinate to exert a quick powerful effect, hence there is apt to be hyperglycemia and glycosuria during the forenoon.

Our limited experience confirms this. In two cases we have attempted rather unsuccessfully to use the protamine insulinate entirely. The effect secured in one of the cases is shown in chart 6.

As is evident from this chart, although we were able to produce fasting blood sugar values at or below a normal figure, marked rises occurred during the middle

# ANOMALIES OF KIDNEY—GUTIERREZ

of the day When the before-breakfast dose was increased in an attempt to overcome this, a delayed effect was obtained so that hours later, at 1 and 3 a. m., severe hypoglycemic reactions with convulsions occurred. This experience emphasized the fact that, with protamine insulinate, reactions can be produced if sufficient dosage is employed.

It seems entirely possible that future work may so improve the type of preparation that one will be able

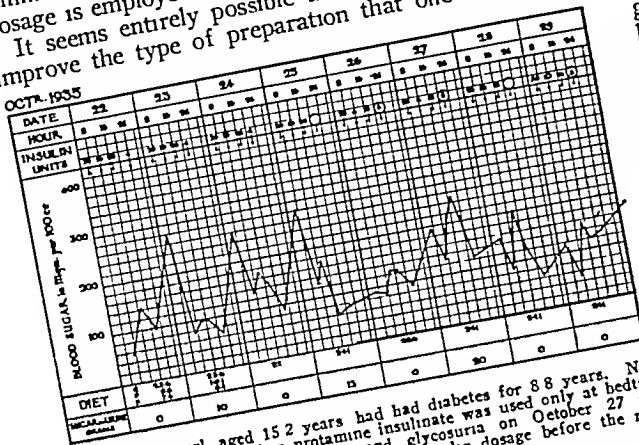


Fig 7—A girl, aged 15 2 years had had diabetes for 8 8 years. Note the satisfactory effect when protamine insulinate was used only at bedtime (10 p. m.). The hyperglycemia and glycosuria on October 27 was obviously due to an unwise reduction in insulin dosage before the noon meal from 10 to 6 units.

to use the protamine insulinate or related compound exclusively. In this case one might find then that the doses could best be given by the clock, irrespective of times of meals, every eight or twelve hours.

We have studied to some extent the effect of giving the injection of protamine insulinate from sixty to ninety minutes before meals. The longer interval between insulin and food probably is desirable, allowing more time for the blood sugar lowering action to become effective.

In two patients we have tried the effect of giving regular insulin before breakfast and supper (and before the noon meal if this is needed) and the protamine insulinate merely for the bedtime (10 p. m.) dose. Satisfactory results can be secured, as chart 7 shows, but there is the inconvenience of an added dose.

## COMMENT

Protamine insulinate is still in the experimental stage. Time will decide its place or that of some related preparation in the treatment of diabetes. In its present stage of development there are certain obvious disadvantages. Some of these can and will, no doubt, be overcome by future work.

1 *Inconvenience*—Since as now used the compound is not indefinitely stable (Hagedorn) the protamine must be added to a given vial of insulin only as it is needed for use within the ensuing days or few weeks. The addition must be made with a sterile, cool syringe. The vial must be shaken each time before insulin is withdrawn. At the present time two types of insulin seem desirable: regular insulin for the morning, and the new preparation for the evening. This is inconvenient.

2 Because its action is slow and gradual, the protamine insulinate alone might be unsatisfactory in diabetic emergencies as during infections or acidosis.

3 As already stated, with some patients it may be difficult to control the blood sugar in the few hours following the evening meal unless the carbohydrate allowed at this meal is materially reduced. This again is due to the lack of immediate sharp action on the part

of the protamine insulinate. In this and similar situations it would be advantageous to have an insulin preparation—perhaps a slightly less insoluble protamine insulinate than the one now used—the action of which combines the desirable effects of both the “old” and the “new” insulin. Dr Hagedorn writes that active work along this line is being continued in his laboratory.

## SUMMARY

Preliminary observations in fifteen cases have in general confirmed the observations of Hagedorn and his associates regarding the protamine insulinate that has been developed in their laboratories. Presumably by slow breakdown of the compound in the subcutaneous tissues, a blood sugar lowering action is secured which is even and more prolonged than that which follows regular insulin. Because of this, wide fluctuations in blood sugar level are less apt to occur and hypoglycemic reactions can be largely avoided.

It must be emphasized that the new preparation is still in the experimental stage. Further work both in insulin laboratories and in diabetic clinics will be necessary to determine when, how, and in which patients protamine insulinate or some related compound can be best used. With the prospect bright of maintaining the level of the blood sugar within normal limits throughout the twenty-four hours, it would appear as if a new revolution in the treatment of diabetes must follow and the possibility created for the diabetic patient to resemble more closely a normal individual.

## RÔLE OF ANOMALIES OF KIDNEY AND URETER IN CAUSATION OF SURGICAL CONDITIONS

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NEW YORK

Anomalies in the upper urinary tract are more commonly observed than in any other system of the body.<sup>1</sup> In olden times anomalies were rarely discovered even post mortem, owing to the difficulty of obtaining material for anatomic dissection and to the lack of proper methods of investigation and diagnosis, as a result of which these malformations were long considered as anatomic curiosities.<sup>2</sup> Since Albarran's systematization of the use of cystoscopy and catheterization of the ureters,<sup>3</sup> and the discovery of pyelography,<sup>4</sup> and more recently the introduction of intravenous urography,<sup>5</sup> it has been possible to diagnose innumerable malformations and pathologic conditions in the upper urinary tract.

Read before the Section on Urology at the Eighty Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

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tions of the kidney that were never before suspected. So amazing is the rôle of the vast number of anomalies of the urinary tract in the etiology of diseases and surgical conditions, as recognized in this urographic era, that it can safely be said that fully 40 per cent of all pathologic conditions of the kidneys and ureters

TABLE 1—*Anomalies of the Kidney Proper*

|  |  |              |  |                                |  |
|--|--|--------------|--|--------------------------------|--|
| 1. Anomalies of Number                               |  |              |  |                                |  |
| (a) Absence of both kidneys                          |  |              |  |                                |  |
| (b) Absence of one kidney (solitary kidney)          |  |              |  |                                |  |
| (c) Double or multiple kidney (supernumerary kidney) | { Unilateral<br>Bilateral  |              |  |                                |  |
| 2. Anomalies of Size                                 |  |              |  |                                |  |
| (a) Hypoplastic kidney                               | { True renal hypoplasia<br>Renal aplasia   |              |  |                                |  |
| (b) Hypertrophic kidney                              | { Lobulated<br>Compensated   |              |  |                                |  |
| 3. Anomalies of Form                                 |  |              |  |                                |  |
| (a) Long kidney                                      |  |              |  |                                |  |
| (b) Short kidney                                     |  |              |  |                                |  |
| (c) Broad kidney                                     |  |              |  |                                |  |
| (d) Lobulated kidney                                 |  |              |  |                                |  |
| (e) Cystic kidney                                    | { Unilateral<br>Bilateral  |              |  |                                |  |
| (f) Polycystic kidney                                | { Unilateral<br>Bilateral  |              |  |                                |  |
| (g) Fused kidney                                     | <table> <tr> <td>Asymmetrical</td><td> L shaped kidney<br/>Sigmoid kidney<br/>Ring shaped kidney ('en gallette')<br/>Kidney en masse<br/>With concavity above<br/>With concavity below<br/>With fibrous isthmus<br/>With isthmus of true renal parenchyma<br/>With one two three or four pelves and ureters </td></tr> <tr> <td>Symmetrical (horseshoe kidney)</td><td></td></tr> </table> | Asymmetrical | L shaped kidney<br>Sigmoid kidney<br>Ring shaped kidney ('en gallette')<br>Kidney en masse<br>With concavity above<br>With concavity below<br>With fibrous isthmus<br>With isthmus of true renal parenchyma<br>With one two three or four pelves and ureters | Symmetrical (horseshoe kidney) |  |
| Asymmetrical   | L shaped kidney<br>Sigmoid kidney<br>Ring shaped kidney ('en gallette')<br>Kidney en masse<br>With concavity above<br>With concavity below<br>With fibrous isthmus<br>With isthmus of true renal parenchyma<br>With one two three or four pelves and ureters   |              |  |                                |  |
| Symmetrical (horseshoe kidney)                       |  |              |  |                                |  |
| 4. Anomalies of Position                             |  |              |  |                                |  |
| (a) Movable or floating kidney                       | { Simple unilateral<br>Simple bilateral  |              |  |                                |  |
| (b) Ectopic kidney                                   | { Bilateral with fusion (horseshoe kidney)<br>Crossed with or without fusion   |              |  |                                |  |
| Any of these anomalies of position may be            | { Lumbar<br>Iliac<br>Pelvic<br>Median  |              |  |                                |  |
| 5. Anomalies of Rotation                             |  |              |  |                                |  |
| (a) Deficient rotation                               | { Unilateral   |              |  |                                |  |
| (b) Excessive rotation                               | { Bilateral  |              |  |                                |  |

are due to congenital anomalies, and that these malformations constitute the most extensive chapter in modern urology.<sup>1</sup>

While it is true that not every such anomaly constitutes a pathologic lesion with clinical symptoms, it has nevertheless been demonstrated by modern urology that any congenital abnormality is potentially a clinico-pathologic entity and liable to become a surgical condition. Such anomalies predispose to poor function and to urinary stasis with resultant retention and possible infection. In many cases of chronic pyuria and recurrent attacks of pyelitis or nephritis in children, the underlying cause has been found to be a congenital malformation of the urinary tract. Deficient function, nephritis and pyelonephritis, as well as hydronephrosis and calculus, are of common occurrence in kidneys that are congenitally abnormal, and in cases in which only one kidney shows an abnormality, the opposite kidney, though normally developed, may suffer from the additional functional strain imposed on it. Fused kidneys of various types, and especially horseshoe kidney, are usually associated with some degree of ectopia, and with abnormalities in the pelvis and the form or number of the ureters. They are, therefore, frequently the site of pathologic lesions. Abnormalities of the pelvis and ureter favor obstruction with the development of hydronephrosis, often with superimposed infection, forming pyonephrosis. In fact, one of the most frequent causes of hydronephrosis is an anomaly

of the ureter or its orifices, or displacement or angulation of the ureter caused by aberrant renal blood vessels.<sup>2</sup> When the malformation is in the lower portion of the ureter, it results in hydro-ureter as well as hydronephrosis, and, when there is infection, in pyo-hydro-ureteronephrosis.

These various pathologic lesions in abnormal kidneys may cause a wide variety of urologic symptoms that direct attention to the urinary tract and bring the patient to the urologist. Renal pain is of frequent occurrence in some of these conditions, occurring more frequently in kidneys with congenital abnormalities than in similar pathologic lesions in otherwise normal kidneys. However, in some instances the development of pathologic lesions in congenitally abnormal kidneys is relatively silent, that is, accompanied by few or no urologic symptoms. The patients suffer from various gastro-intestinal symptoms suggesting a lesion of some abdominal or pelvic organ or a functional disturbance of the gastro-intestinal tract. These symptoms are to be attributed to pressure or traction on other organs or nerve plexuses by the abnormal kidney. Often one or more abdominal operations have been performed without relief before the patient is referred to the urologist. It is of paramount importance, in order to avoid errors in diagnosis, that careful cystoscopic and urographic study should be made in every case in which the slightest urinary symptoms become manifest, because it is obvious that many silent surgical conditions of the upper urinary tract confuse the preoperative diagnosis.

TABLE 2—*Anomalies of the Excretory Apparatus of the Kidney (Calices, Pelvis and Ureter)*

|   |   |   |                           |   |   |  |   |   |  |
|---|---|---|---------------------------|---|---|--|---|---|--|
| 1. Calices  | { Absent<br>Aberrant<br>Abnormal in number, size or position  |   |                           |   |   |  |   |   |  |
| 2. Renal pelvis   | <table> <tr> <td>{ Absent<br/>Rudimentary<br/>Double (bifid) or multiple</td><td>{ Unilateral<br/>Bilateral</td></tr> <tr> <td>Hydronephrosis (congenital)</td><td>{ Intrarenal pelvis } { Unilateral<br/>Extrarenal pelvis } { Bilateral</td></tr> <tr> <td>Diverticulum of renal pelvis</td><td></td></tr> </table>   | { Absent<br>Rudimentary<br>Double (bifid) or multiple   | { Unilateral<br>Bilateral | Hydronephrosis (congenital)   | { Intrarenal pelvis } { Unilateral<br>Extrarenal pelvis } { Bilateral                   | Diverticulum of renal pelvis   |   |   |  |
| { Absent<br>Rudimentary<br>Double (bifid) or multiple   | { Unilateral<br>Bilateral   |   |                           |   |   |  |   |   |  |
| Hydronephrosis (congenital)   | { Intrarenal pelvis } { Unilateral<br>Extrarenal pelvis } { Bilateral   |   |                           |   |   |  |   |   |  |
| Diverticulum of renal pelvis  |   |   |                           |   |   |  |   |   |  |
| 3. Ureter   | <table> <tr> <td> Anomalies of number<br/> { Single (one ureter absent)<br/>Double on one side<br/>Triple<br/>Quadruple<br/>Quintuple<br/>Sextuple </td><td>{ Complete<br/>Incomplete</td></tr> <tr> <td> Anomalies of form, size and position<br/> { Diverticulum of ureter<br/>Imperforate ureter<br/>Stricture of the ureter<br/>Dilatation of ureter<br/>Golf hole type of ureteral orifice </td><td> { Simple<br/>Multiple<br/>Pyo-ureter<br/>Hydro-ureter<br/>Megalo-ureter<br/>Total<br/>Partial </td></tr> <tr> <td> Ureter ectopic<br/> { misplaced in bladder<br/>with extravasation<br/>orifice opening into </td><td> { At fundus<br/>in diverticulum<br/>near bladder neck etc.<br/>other ureter<br/>urethra<br/>genital tract<br/>bowel </td></tr> <tr> <td> Ureter twisted or occluded<br/> Ureters crossed<br/> Ureter with valve formation<br/> Ureterocele </td><td></td></tr> </table> | Anomalies of number<br>{ Single (one ureter absent)<br>Double on one side<br>Triple<br>Quadruple<br>Quintuple<br>Sextuple | { Complete<br>Incomplete  | Anomalies of form, size and position<br>{ Diverticulum of ureter<br>Imperforate ureter<br>Stricture of the ureter<br>Dilatation of ureter<br>Golf hole type of ureteral orifice | { Simple<br>Multiple<br>Pyo-ureter<br>Hydro-ureter<br>Megalo-ureter<br>Total<br>Partial | Ureter ectopic<br>{ misplaced in bladder<br>with extravasation<br>orifice opening into | { At fundus<br>in diverticulum<br>near bladder neck etc.<br>other ureter<br>urethra<br>genital tract<br>bowel | Ureter twisted or occluded<br>Ureters crossed<br>Ureter with valve formation<br>Ureterocele |  |
| Anomalies of number<br>{ Single (one ureter absent)<br>Double on one side<br>Triple<br>Quadruple<br>Quintuple<br>Sextuple   | { Complete<br>Incomplete  |   |                           |   |   |  |   |   |  |
| Anomalies of form, size and position<br>{ Diverticulum of ureter<br>Imperforate ureter<br>Stricture of the ureter<br>Dilatation of ureter<br>Golf hole type of ureteral orifice | { Simple<br>Multiple<br>Pyo-ureter<br>Hydro-ureter<br>Megalo-ureter<br>Total<br>Partial   |   |                           |   |   |  |   |   |  |
| Ureter ectopic<br>{ misplaced in bladder<br>with extravasation<br>orifice opening into  | { At fundus<br>in diverticulum<br>near bladder neck etc.<br>other ureter<br>urethra<br>genital tract<br>bowel   |   |                           |   |   |  |   |   |  |
| Ureter twisted or occluded<br>Ureters crossed<br>Ureter with valve formation<br>Ureterocele   |   |   |                           |   |   |  |   |   |  |

and such a urologic study will often show the presence of a congenital abnormality of the kidney or ureter as the underlying cause of the entire syndrome.

In a recent communication before this section at the New Orleans session, I<sup>3</sup> reported several cases of

6. Mathe, C. P. The Rôle of Aberrant Vessels in the Production of Hydronephrosis. *J. Urol.* 19: 211 (March) 1928. Hloman, Frank. Obstructive Hydro-Ureteral Angularity with Hydronephrosis in Children. *Arch. Surg.* 18: 2158 (Jan.) 1929.  
7. Gutierrez, Robert. Surgical Aspects of Renal Agenesis with Special Reference to Hypoplastic Kidney, Renal Aplasia and Congenital Absence of One Kidney. *Arch. Surg.* 27: 686-735 (Oct.) 1933.

## ANOMALIES OF KIDNEY—GUTIERREZ

congenital absence of one kidney, as well as hypoplastic and aplastic kidney, and more recently in a monograph I<sup>8</sup> have discussed the clinical management of horseshoe kidney at length. At this time, in order to save time, I will only report three unusual cases of anomalies of the upper urinary tract, which will serve to bring out the importance of the rôle of such anomalies in the causation of surgical conditions.

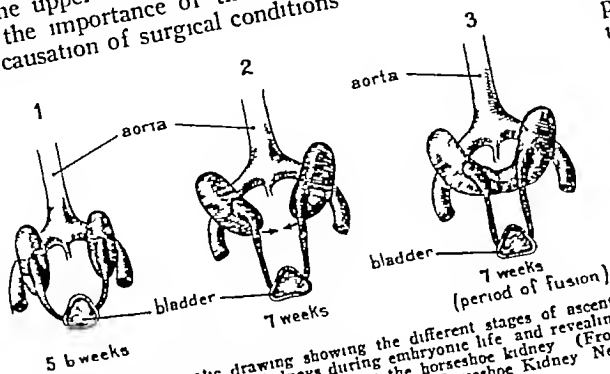


Fig 1—Diagrammatic drawing showing the different stages of ascent and migration of the kidneys during embryonic life and revealing the theoretical occurrence of fusion to form the horseshoe kidney (From Gutierrez, Robert. *The Clinical Management of Horseshoe Kidney*. New York: Paul B Hoeber Inc. 1934.)

The literature on anomalies of the kidneys and ureters is so extensive, and the types of anomalies so innumerable, that it would be impossible to discuss all of them in detail, and therefore for practical use I have worked out an anatomic and clinicopathologic classification to outline briefly the various types of congenital abnormalities of the kidney, its excretory apparatus (calices, pelvis and ureter) and its blood and lymphatic supply. This classification is given in the accompanying tables.

## EMBRYOLOGY

The term "congenital anomalies" implies that the origin of such anomalies is to be sought in embryonic life. A study of the development of the urogenital system shows its great complexity and indicates the reasons for the wide diversity of types of congenital malformations in the upper urinary tract. In the embryologic evolution of this tract three essential renal organs are formed in rapid succession, the pronephros, the mesonephros and the metanephros. In the only the latter persists to become the kidney. In the course of the kidney's development it undergoes a migration upward, when the ureter, increasing in length, forces the renal pelvis to change its position, the caudal extremity rising more slowly. Not only does the kidney migrate, it also undergoes a rotation around its longitudinal axis. Because of the intimate relation of the kidney to the umbilical arteries and the bifurcation of the aorta, it is evident that there may be some mechanical obstruction by these arteries to interfere with the kidney's migration and rotation (fig 1). Such interference would result in various types of fused and ectopic kidneys, fusion being due to the union of two kidney blastemas in early fetal life. The fused organ may assume a number of different shapes and may be symmetrical or asymmetrical with reference to the midline of the body. Most important of these types of fused kidney is the horseshoe kidney<sup>9</sup> in which the two renal organs have become fused into a single mass lying directly across the median axis of the body joined together by an isthmus. Such fused kidneys are usually also ectopic.

If for any reason the elements of the wolffian duct are arrested in their development of the primitive nucleus on one side, half of the urinary apparatus will be absent from the earliest period of fetal life. The same general embryonal influences may also be orderly development of the kidneys may also be responsible for the various anomalies of the pelvis and the ureters. There may be a surplus, a deficit or an ectopia of the excretory passages, depending on the precise nature of the developmental abnormality in the ureteral bud in very early fetal life.<sup>1</sup>

## SYMPTOMATOLOGY

When any congenital anomalies of the urinary tract are present, the individual may reach adult age without having any clinical symptoms indicating their existence, but this is rather unusual. Sometimes it is the effect of a general constitutional disease that causes symptoms to develop by putting additional strain on the working capacity of the kidneys. It is therefore the rule rather than the exception for patients with urinary tract anomalies to develop symptoms that sooner or later bring them to the urologist. But before they reach the urologist, a considerable proportion—probably 30 to 40 per cent—have undergone unnecessary operations because the symptoms suggested disease of some abdominal or pelvic organ. In some types of renal abnormalities, abdominal pain of an indefinite nature is an important factor in the clinical syndrome. In some cases it is associated with definite urinary symptoms which suggest—or should suggest—a lesion of the urinary tract. In others the abdominal symptoms over-

TABLE 3—Anomalies of the Blood and Lymphatic Supply of the Kidney

| Anomalies of number 1 to 6 per kidney |  |
|---------------------------------------|--|
| 1. Arteries                           | Anomalies of origin from                             |
|                                       | aorta  |
|                                       | common iliac artery                                  |
|                                       | external iliac artery                                |
| Anomalies of course with reference to | internal iliac artery                                |
|                                       | general artery                                       |
|                                       | anterior   |
|                                       | posterior  |
| Anomalies of penetration at           | hilus  |
|                                       | superior pole  |
|                                       | inferior pole  |
|                                       | front or back of kidney                              |
| 2. Veins                              | from renal artery                                    |
|                                       | from aorta   |
|                                       | from renal artery                                    |
|                                       | from aorta   |
| 3. Lymphatics                         | from common or external iliac artery                 |
|                                       | margin of kidney                                     |
|                                       | Abnormal position of inferior vena cava on left side |
|                                       | Retro aortic anastomosis of veins                    |
| 4. Lymphatics                         | Presence of a vein at superior pole                  |
|                                       | Presence of a vein at inferior pole opening into     |
|                                       | renal vein   |
|                                       | venous cava  |
| 5. Lymphatics                         | Renal vein entirely retroperitoneal                  |
|                                       | Anomalous connection with other systems              |
|                                       | Following anomalous blood vessels                    |
|                                       | Anomally connecting with Pecquet & cistern           |

shadow the urinary symptoms so that they escape notice unless a careful study of the patient is made. In some cases of hypoplastic or aplastic kidney there may be an entire absence of urinary symptoms and a history of bilateral abdominal pain or there may be lumbar pain and symptoms of chronic nephritis. Even in cases of hydronephrosis symptoms of gastro-intestinal disturbance may predominate<sup>2</sup> or tumor formation may be the only symptom. In other cases there may be only slight frequency or dysuria while in still others there

<sup>8</sup> Gutierrez, Robert. *The Clinical Management of Horseshoe Kidney*. New York: Paul B Hoeber Inc. 1934.

<sup>9</sup> Heitz Boyer M. Le syndrome enterorénal, néphrites et pyelonephrites d'origine intestinale. Bull et mem Soc. med d hop de Paris. Juv 25 and October 9 1919. 43: 845 (Oct 17) 1919.

may be severe renal colic and bladder distress or tenesmus, accompanied by chronic cystitis or chronic pyelitis

#### HORSESHOE KIDNEY SYNDROME

One of the most characteristic clinical syndromes is that which is associated with horseshoe kidney disease, in which there are always associated anomalies of the pelves and ureters and of the blood vessels. This is characterized by three main clinical features (fig 3) (1) abdominal pain about the epigastric or umbilical region, (2) a history of chronic constipation associated or not with gastro-intestinal disorders and (3) urinary disturbances with early signs of chronic nephritis. This constitutes the horseshoe kidney syndrome,<sup>10</sup> which I have observed in 96 per cent of my series of more than thirty cases of horseshoe kidney (and which also has been observed independently by Sangree and his associates,<sup>11</sup> Foley,<sup>12</sup> Papin<sup>13</sup> and others). As frequently the abdominal symptoms may in the early stages of this syndrome be the predominating ones, there may often be a history of a considerable period of illness with incorrect diagnosis and treatment before the patient comes to the urologist. Such patients may be acutely ill with pyelonephritis and nephritis and may even show uremic symptoms, others have renal colic due to calculi, resulting from slowly increasing

hazy or cloudy urine with slight pollakiuria. The abdominal symptoms are due to the fixation of the horseshoe kidney and to its abnormal relations to the surrounding organs, nerves and blood vessels. The urinary symptoms are due fundamentally to lack of renal drainage with resulting infection and inflammation, all directly traceable to the presence of the major renal anomaly.

#### DIAGNOSIS

Because of the confusing nature of the clinical symptoms in renal anomalies, a most careful and searching diagnostic study is necessary to determine the true nature of the pathologic condition present. After a study of the patient's history, the clinical symptoms and the physical examination, the urologic examination should include cystoscopy, catheterization of the ureters, a renal functional test, roentgenography, pyelography and intravenous urography, and sometimes cystography and pyeloscopy. Cystoscopy shows lesions in the bladder, and what is of special interest in relation to urinary tract anomalies, any anomalous position of

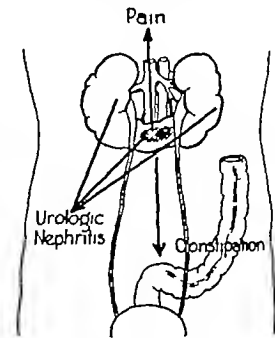


Fig 3—The clinical syndrome of horseshoe kidney disease showing graphically the triad of symptoms composed of (1) pain in the epigastrum or umbilical region, (2) chronic constipation and (3) urinary symptoms of pyelitis, pyonephritis and chronic nephritis.

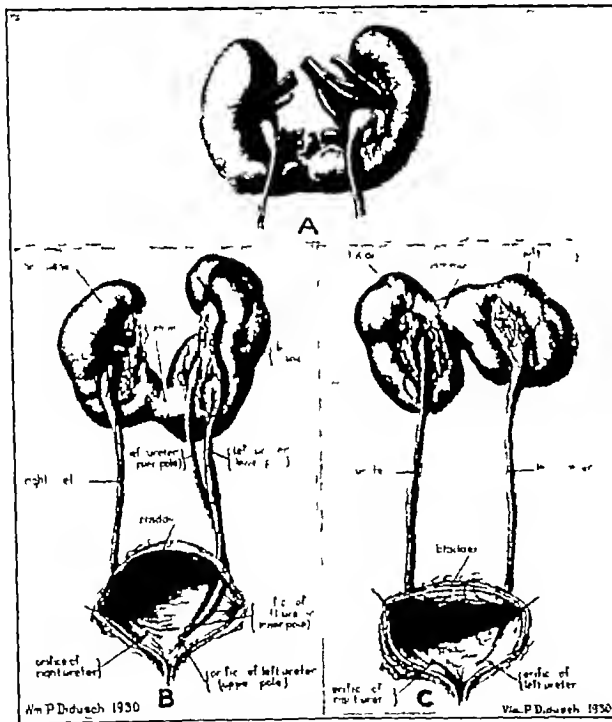


Fig 2—Drawings from postmortem specimens of three types of horseshoe kidney. A typical fusion of the two kidneys by the lower pole. B horseshoe kidney with three ureters. C horseshoe kidney with fusion by the upper pole.

urinary stasis. Some patients, however, are referred to the urologist for less advanced urinary symptoms such as albuminuria, microscopic hematuria, pyuria, or

any anomalous position of the ureteral orifices or anomalies of the trigon.<sup>14</sup> A red and congested mucosa in the bladder may result from ureteral orifices or anomalies of the trigon.<sup>14</sup> A red and congested mucosa in the bladder may result from the infection of the urinary stasis characteristic of horseshoe kidney or anomalies of the ureter or pelvis. Chromocystoscopy may be employed, the time being noted of the first appearance at each ureteral orifice of a dye, usually indigo carmine, injected intravenously, this indicates the relative function of the two kidneys. Other functional tests should be employed and the urine from each kidney collected separately whenever ureteral catheterization is possible. Catheterization of the ureters is an important means of revealing obstruction or ectopic conditions in the ureters, which are so frequently associated with malformations or ectopia of the kidneys.<sup>16</sup>

In roentgenography, catheterization of the ureters with opaque catheters gives much valuable information in relation to abnormalities in the ureters and in their mode of insertion in the pelvis, as well as indicating abnormalities in the shape or position of the kidney. In addition, plain roentgenography gives other valuable information for diagnosis, the kidney shadows in the plain x-ray film may give the first hint of the presence of an ectopic kidney or fused kidney especially of the horseshoe type. It may show calcified cysts or calculi lying in abnormal positions indicating renal fusion. Sometimes a coraliform stone, the image of which outlines an abnormal type of pelvis or calices, indicates the presence of a malformation of these structures.

Pyelography or urography is the method of examination on which the main dependence must be placed

10 Gutierrez, Robert. Horseshoe Kidney in discussion. *J Urol* 27: 85-88 (Jan) 1932. 32: 655-657 (Dec.) 1934.  
11 Sangree, Henry Morgan, David, Klein, Thomas and Trasi Rocco. Horseshoe Kidney and the Relation of Nephritis and Calculus Formation to Anomalous Circulation. *J Urol* 32: 648 (Dec.) 1934.  
12 Foley, F. E. B. in discussion on Sangree and others. *J Urol* 32: 657-659 (Dec.) 1934. Donohue, P. F. Division of Horseshoe Kidney for Relief of Ureteropelvic Junction Obstruction. *ibid.* 27: 59 (Jan) 1932. Ficatoste, J. and Lassaletta, M. G. A propósito del diagnóstico del riñon en herradura. *El signo de Gutierrez*, An. de la Casa de Salud Valdecilla 6: 103-117 (April) 1935.  
13 Papin, Edmond. Foreword from Gutierrez, Robert. *The Clinical Management of Horseshoe Kidney*. New York, Paul B. Hoeber Inc., 1934.

14 Lau, F. T., and Henline, R. B. Ureteral Anomalies. *J A M A* 96: 587 (Feb 2) 1931. Dosset, R. Les abouchements extra vésicaux de l'uretère. *Arch urol clin de Necker* 6: 133-164 1927. Braasch, W. F., and Scholl, A. J. Pathological Complications with Duplication of the Renal Pelvis and Ureter (Double Kidney). *Surg Gynec. & Obst.* 35: 401-417 (Oct) 1922.  
15 Papin, Edmond. Anomalies congénitales du rein in *Encyclopédie française d'urologie*, Paris, Gaston Doin & Cie 3: 227-322. 1: 365-506 1914.

for correct diagnosis of anomalies of the urinary tract. This method, developed in recent years, makes possible the delineation and visualization of the entire urinary tract. There are now two methods of pyelography in use (1) instrumental, or retrograde, or ascending pyelography, obtained by the injection of an opaque substance through the ureters, and (2) intravenous, or descending, pyelography, or the injection into a vein of a special type of opaque substance (iopax), which is selected in its effect on the kidney shadow.<sup>5</sup> Descending pyelography may also be obtained by oral, rectal or subcutaneous administration of the opaque substance.<sup>16</sup> Although this descending method does not give such clear shadows as the ascending method, it is nevertheless of great value in cases in which ureteral catheterization is impossible owing to obstruction or anomaly of the ureter. For instance, in aplastic kidney when the ureter is rudimentary and not patent the aplastic mass of renal tissue is shown in the intravenous pyelogram whenever a rudimentary artery is present.<sup>7</sup> However, in certain instances when the kidney parenchyma has been entirely destroyed by any pathologic process and there is therefore no kidney secretion, there will be no elimination of the opaque substance and it is necessary to resort to cystoscopy, ureteral catheterization and retrograde pyelography in order to obtain the proper diagnosis. In the diagnosis of renal and ureteral anomalies, when retrograde pyelography is used, it must be emphasized that a bilateral pyelogram is necessary to show the conditions present in the entire urinary tract.

#### THE HORSESHOE KIDNEY PYELOGRAPHIC TRIANGLE

In the diagnosis of horseshoe kidney, the use of the bilateral pyelogram is essential, as only by this means can the pathognomonic horseshoe kidney triangle be demonstrated (fig 4). In this type of fused kidney the calices are in reverse position, directed inward toward the spinal column, bringing the lower calices of the two sides in close approximation to each other,

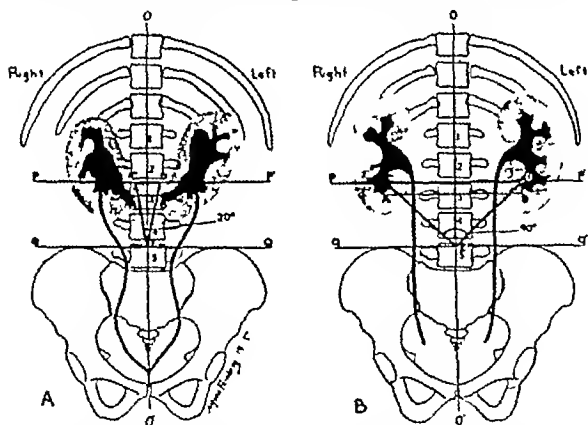


Fig 4—Diagrammatic drawings of the pyelographic triangle. A, bilateral pyelo-ureterogram of a typical horseshoe kidney showing the pathognomonic horseshoe kidney pyelographic triangle with its minimum basal angle of 20 degrees. B, normal bilateral pyelogram showing the normal pyelographic triangle. C and D, bilateral ectopic kidneys with hydronephrosis on one side. E, nephrolithiasis with hydronephrosis in a unilateral ectopic kidney. F, a single kidney in ectopia.

producing a pyelographic picture so characteristic that I have projected from it a triangle—the pyelographic triangle of the horseshoe kidney—with a narrow basal angle usually less than 20 degrees, in contrast with the corresponding angle of the pyelographic triangle

of the normally placed kidney is between 64 and 90 degrees. This pathognomonic pyelographic triangle of the horseshoe kidney, which I have described elsewhere,<sup>8</sup> I have found to be of the greatest value in the diagnosis of this anomaly. Other manifestations in the pyelogram of the horseshoe kidney that are of diag-

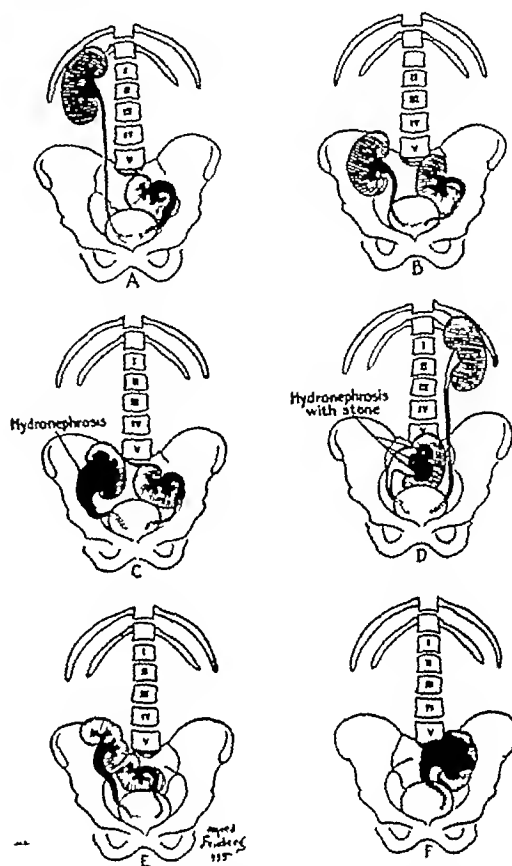


Fig 5—Different types of unilateral or bilateral ectopic kidney with or without fusion and their surgical treatment when associated pathologic conditions are present as in C and D and transposition of the kidneys is indicated. A, unilateral ectopic kidney. B, bilateral ectopic kidney. C, bilateral ectopic kidney with hydronephrosis on one side. D, nephrolithiasis with hydronephrosis in a unilateral ectopic kidney. E, a fused kidney in crossed dystopia. F, a single kidney in ectopia.

nostic value are the possible delineation of the isthmus, the shadows of calculi within the kidney close to the vertebral column or overlapping it, the "flower vase" position of the ureters, and the "bottle neck" shape at the ureteropelvic junction. But of all these the pyelographic triangle of the horseshoe kidney is the most important (fig 4A).

#### TREATMENT

In anomalies of the upper urinary tract the treatment to be adopted depends not only on the type of anomaly but also on the presence of any associated pathologic condition. If the anomaly causes no symptoms but has been discovered accidentally, no treatment at all is indicated, as some persons with congenital malformations live indefinitely without developing any clinical symptoms. Such patients should however, be kept under observation. In some cases only general medical treatment and urologic treatment to secure drainage and relief of infection are indicated. The urologic treatment in these cases includes cystoscopic treatment with lavage of the renal pelvis and the use of indwelling catheters.<sup>17</sup> When surgery is indicated,

16. Beer, Edwin and Theodore, F. H. Excretory Urography After Subcutaneous Injection of Neostiodan. J. A. M. A. 103: 181 (July 21) 1934.

17. Gutierrez, Robert. The Value of Indwelling Ureteral Catheters in Urinary Surgery. Surg., Gynec. & Obst. 50: 441-454 (Feb.) 1930.

this does not necessarily imply a radical operation. In some cases of hypoplastic and aplastic kidney it is best to remove the infantile or rudimentary organ entirely, provided the remaining kidney has been found to have adequate function.<sup>7</sup> In single kidney only the most conservative surgical measures can be employed in the case of pathologic conditions arising in such a single kidney.<sup>18</sup> In the treatment of cystic or polycystic kidney conservative measures have also been devised, but if only one kidney is involved and the other kidney has normal or nearly normal function, nephrectomy is often the method of choice.<sup>10</sup> In unilateral ectopic kidney when there is an associated pathologic condition (fig 5 C and D), as calculus, infected hydronephrosis or tumor or tuberculosis, nephrectomy by the trans-peritoneal route is always the procedure of choice, provided the kidney of the opposite side has adequate function. In the treatment of hydronephrosis numerous plastic operations on the pelvis and for the derivation

nephrectomy is the operation of choice, always with consideration of the function of the opposite kidney. In some cases with complicating infection and pyo-hydronephrosis a preliminary nephrostomy, followed by a secondary nephrectomy, is indicated.<sup>21</sup> Where a marked dilatation of the ureter—hydro-ureter—is associated with hydronephrosis, removal of both kidney and ureter is necessary by a combined ureteronephrectomy, as described elsewhere.<sup>22</sup> Also this combined procedure can be successfully used in cases of an ectopic ureter in which the kidney and ureter have lost their entire function, and in cases of double kidney and double ureter in which one is in ectopia opening extravasically, when a combined ureteroheminephrectomy also is indicated.<sup>23</sup>

In horseshoe kidney disease the ideal treatment is the division of the isthmus or symphysiotomy, followed by nephropexy or suspension of one half of the organ.<sup>8</sup> In this operation the ureters and pelves should also be freed from any bands of adhesions and aberrant blood vessels, so commonly present in association with this anomaly. If there are pathologic conditions involving a half of the organ, any conservative operation can be done as in the ordinary type of kidney. If one half of the organ is the site of a pathologic condition that has practically destroyed its parenchyma and rendered it functionless, this half may be removed—a heminephrectomy—provided the remaining half has adequate function.<sup>24</sup> All these operations on a horseshoe kidney should always be done extraperitoneally by the lumbar route of approach in order to avoid peritoneal complications.<sup>18</sup>

#### REPORT OF CASES

The following three cases illustrate various types of anomalies that caused marked urinary obstruction and confusing symptoms, which required complete urologic and urographic examination for diagnosis and operative treatment.

**CASE 1**—A boy, H. R., aged 2 years, born with an imperforate anus, had been suffering from chronic 'pyelitis' and 'nephritis' and gastro intestinal upsets, he had always been a delicate child. He was admitted to the hospital July 8, 1922, with convulsions and a temperature up to 103 F and died in uremia July 11. Autopsy showed the presence of a well developed glans penis with a double urethra, one opening normally into the bladder and the other a blind channel. Examination of the bladder, ureters and kidney showed the golf hole type of ureteral orifices (fig 6), with enormous hydro-ureters and hydronephrosis and partial destruction of the kidney parenchyma more marked on the left side, also bilateral pyelitis and pyelonephritis, this obviously resulted in actual destruction of kidney function, which was the direct cause of death. This case shows the concomitant occurrence of congenital malformation of the upper and lower urinary tract as well as abnormalities of the intestinal canal. Cases of this kind demand a complete urologic and urographic examination and early surgical treatment in order to relieve the surgical condition.

**CASE 2**—A woman, aged 48, had been suffering from occasional lumbar pain and gastro intestinal disorders since childhood. She had been repeatedly examined in the past twenty-five years for the gastric symptoms and pain in the left upper quadrant. She had also had occasional urinary disturbances with frequency of urination, a slight dysuria and microscopic

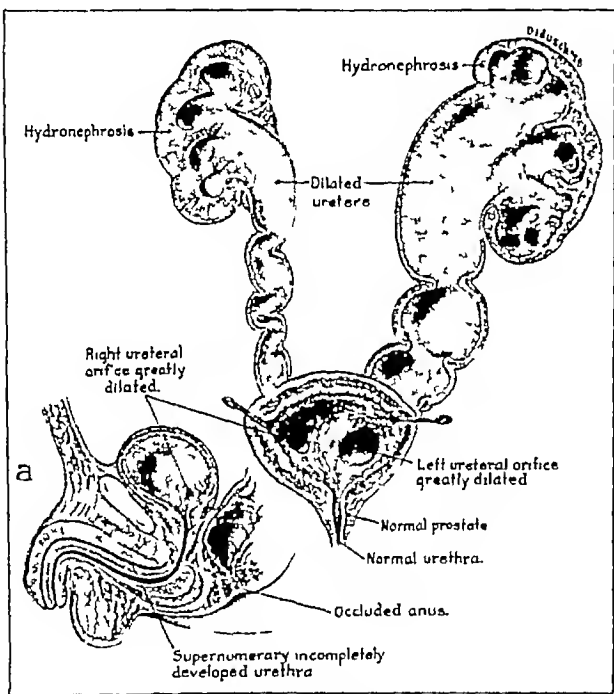


Fig 6—Drawing from postmortem specimen showing congenital golf hole type of ureteral orifice causing hydro-ureter and hydronephrosis in a boy 2 years old with double urethra and occluded anus. Erroneously diagnosed as chronic 'pyelitis' and 'nephritis' patient died in acute uremia from renal failure.

of the urine and drainage of the hydronephrotic sac have been used.<sup>1</sup> The conservative operation for hydronephrosis most widely advocated today is the resection of the renal pelvis with complete preservation of the renal blood supply,<sup>20</sup> this type of operation preserves the integrity of the ureter and brings it into a nearly vertical position, which maintains efficient drainage. In some cases of hydronephrosis, however, in which the renal parenchyma has been completely or almost completely destroyed and the kidney rendered functionless,

18 Moore, T. D. Congenital Solitary Hydronephrotic Infected Kidney. *Pyelo-Ureteroplasty*. J. Urol. 27: 581-593 (May) 1932.  
Fruchand, H. Hydronephrose d'aspect anormal developpée sur un rein ectopique et opérée pour un kyste de l'ovaire. J. d'urolog. 35: 33-36 (Jan) 1933.

19 Walters, Waltman and Braasch, W. F. Surgical Aspects of Polycystic Kidney. *Tr. Am. A. Genito-Urin. Surg.* 26: 385 (1933).

20 Young, H. H. Obstructions to the Ureter Produced by Aberrant Blood Vessels. A Plastic Repair Without Ligation of Vessels or Transplantation of Ureters. *Surg., Gynec. & Obst.* 54: 26 (Jan) 1932.  
Papin, Edmond. Les hydronephroses anatomique et pathogénique avec un atlas. Paris: Gaston Doin & Cie 1930.

21 Gutierrez, Robert. Nephrostomy as a Preliminary Drainage in Preparation for Secondary Nephrectomy. J. Urol. 31: 305-362 (March) 1934.

22 Gutierrez, Robert. Indications and Technique of Combined Ureteronephrectomy. *Ann. Surg.* 93: 511-543 (Feb.) 1931.

23 Papin, Edmond. Chirurgie du rein. Paris: Gaston Doin & Cie 1928.  
Campbell, M. F. Hemipyonephrosis in Infants and Children. *Treatment by Heminephrectomy*. *Am. J. Surg.* 21: 85-96 (July) 1933.

24 Walters, Waltman and Priestley, J. B. Horseshoe Kidney. A Review of Sixty Eight Surgical Cases. J. Urol. 28: 271 (Sept.) 1932.



# DOUBLE URETER—HAWTHORNE

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pyuria and hematuria. She had diabetes and had been treated by diet and insulin. For the past five months she had noted shortness of breath and fatigue on slight exertion and had complained of menstrual irregularities. She was given gynecologic examination by Dr. David Barrows at the Hospital for the Ruptured and Crippled, who diagnosed a calcified cyst of the right ovary and, in view of her bladder symptoms, referred her to me for urologic examination. July 16, 1934, on cystoscopic examination, I found multiple flecks of pus at the fundus of the bladder, and a normal ureteral orifice on the right side, which was readily catheterized. On the left side the ureteral orifice was very small and of a pin-point type and could not be catheterized with a No. 6 French catheter but after the passage of a No. 4 bougie it admitted a No. 5 French catheter, although with difficulty and definite obstruction. The phenolsulfonphthalein test showed normal function of the right kidney but no excretion of the dye in twenty minutes on the left side. The plain roentgenogram revealed the calcified cyst of the right ovary. The retrograde bilateral ureteropyelogram showed a normal kidney and hydronephrosis on the right side and an enormous hydro ureter and hydronephrosis on the left side. The latter was removed by a combined total ureteronephrectomy by my technic described elsewhere.<sup>22</sup> The patient had an uneventful recovery, leaving the hospital in three weeks. This case illustrates the value of a complete urologic examination in an effort to establish an accurate diagnosis in doubtful cases with abdominal symptoms of long standing that may be due to congenital malformations of the urinary tract.

CASE 3.—M. G., a woman, aged 40, complained of intermittent attacks of retention of urine with dysuria, frequency, burning and difficulty in urination. Cystoscopic examination revealed two pedunculated mobile masses in the bladder, the one at the right side was so large that it covered the beak of the cystoscope. The first impression was that of a large tumor of the bladder. Further inspection of the left ureteral orifice during ejaculation of urine revealed the presence of a small ureterocele and it was then discovered that a large pedunculate mass on the right side was also a ureterocele. As both ureteral orifices were of the pin-point type and could not be catheterized it was decided to fulgurate both orifices through the cystoscope in an effort to destroy the ureterocele and create new ureteral orifices. This was successfully accomplished, and three weeks later when the patient returned for further treatment the cystoscopic examination revealed a good-sized stone about the size of a pigeon egg, which came from the larger ureter and which was readily seen in the fundus of the bladder. This stone was crushed with the cystoscopic rongeur and entirely removed by further manipulation. At a later date both ureters were catheterized with ease and a retrograde bilateral ureteropyelogram was made, revealing a congenital malformation of the upper urinary tract—reduplication of ureters and renal pelvis on both sides with a slight pyelitis and hydronephrosis. On account of the presence of this infection, a course of cystoscopic treatments was given, with dilatation of the ureters and lavage of the renal pelvis. This promptly relieved the symptoms and there has been no recurrence to date. This case illustrates the important role played by the anomalies of ureters and kidneys in diseases and surgical conditions in the upper urinary tract, which can be cleared up only by proper urologic and surgical treatment.

## SUMMARY AND CONCLUSIONS

My purpose in this article is to present a brief review of the congenital anomalies of the kidney and ureter and to call attention to the frequent occurrence of associated pathologic conditions that cause clinical symptoms and require surgical treatment. The classification presented shows the numerous anatomic varieties of these anomalies and also indicates the clinical and pathologic conditions associated with such anomalies. The clinical syndrome and the pathognomonic diagnostic sign of horseshoe kidney disease illustrate the clinical importance of congenital abnormalities of the urinary tract.

The conclusions to be drawn from this presentation and to be emphasized are the importance of complete

urological and urographic examination in every case in which there are obscure abdominal symptoms and minor urinary symptoms, and the excellent results that can be obtained by proper surgical methods when a correct diagnosis is thus established.

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## THE EMBRYOLOGIC AND CLINICAL ASPECT OF DOUBLE URETER

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The anomaly of duplication of the ureter and pelvis has been recognized for many years. At first it was an anatomic curiosity, found at autopsy or at operation, later it was diagnosed clinically on rare occasions, until now this anomaly is realized to be one of the most common of all urinary malformations and the etiologic factor in many renal lesions.

Double ureters have been classified as 1 Complete, wherein two pelves on the same side, one superior to the other, drain by separate ureters and open by separate orifices on to the floor of the bladder. The openings may lie side by side or one may be superior to the other. They may also be closely situated or set at some distance apart.

2 Incomplete duplication, the branched or cleft ureter, wherein two pelves and two upper ureters join to enter the bladder by one common ureter and orifice. Both these forms of duplication may be unilateral or bilateral. The bifurcation in the latter group may be situated at any point in the course of the ureter, from just above the bladder up to the renal pelvis. Minor degrees of bifurcation are commonly referred to as bifid pelves. To understand the variations of ureteral duplication, it is necessary to refer back to the development of the urinary system.

The adult kidney and its ducts are preceded in their development by two temporary secretory organs. These to a great extent degenerate—portions of them, and only in the male, being retrieved as the excretory ducts of the genital system. The first of these transient kidneys, the pronephros, is a series of paired segmented tubules arising from the mesoderm of the intermediate cell mass or nephrogenic cord. These tubules run from the seventh to the fourteenth segments and are joined together by a solid cord which, becoming canalized, continues downward past the fourteenth segment, fuses with the dorsolateral wall of the cloaca, and penetrates it to form the pronephric duct. These pronephric tubules almost immediately degenerate, but the duct persists and is utilized as the excretory duct of the mesonephros, the second of the temporary kidneys.

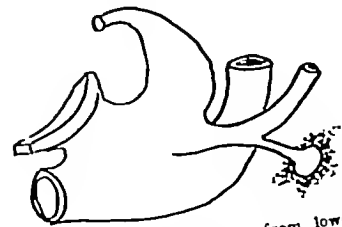


Fig. 1.—Ureter budding from lower end of Wolffian duct. Terminal dilatation surrounded by cells from lower end of nephrogenic cord.

From the Department of Urology, Royal Victoria Hospital.  
Read before the Section on Urology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.  
The author is indebted to Dr. David W. MacKenzie for his permission to report these cases and to Mr. H. H. Cheney for some of the illustrations.

The mesonephros, or wolffian body, consists of a larger number of nonsegmented tubules and extends from the sixth cervical to the third lumbar segment. The superior tubules degenerate rapidly and it is probable that there are never more than thirty of these tubules fully developed at any one time. These tubules arise as solid nests of cells from the nephrogenic cord, become hollowed out and elongated transversely, and



Fig. 2—Subdivision of primary pelvis into major calices. Each division surrounded by nephrogenic cells.

fuse at their lateral end and open into the existing pronephric duct. In the lower end of this duct, now called the mesonephric or wolffian duct, there appears about the fifth week an epithelial bud. This bud arises from the dorsal wall at a point just where the duct turns anteriorly to pierce the cloaca. It grows upward and backward as a hollow tube. The distal extremity dilates into the primary renal pelvis and is surrounded by mesenchymal cells from the lower end of the nephrogenic cord. The primary renal pelvis on reaching this point divides into superior and inferior pole tubules. Two additional primary tubules grow out laterally between these two. The nephrogenic cells also divide, to surround each tubule like a cap. From this first subdivision are formed the major calices. Division of these primary calices forms the minor calices. The third and fourth divisions provide for enlargement of the calices, and subsequent divisions provide the collecting ducts and tubules. The nephrogenic cells in the meantime have divided in keeping with the divisions of the pelvis and surround each divided branch, ultimately forming a vesicle, which unites with the collecting tubule to form the uriniferous tubule.

During this time marked changes take place in the cloaca. In the V-shaped area between the hind-gut and the allantois a wedge of tissue, the urorectal septum, growing downward, meets the cloacal membrane, dividing the cloaca into the rectum and the urogenital sinus and leaving the openings of the wolffian ducts on the ventral side. Openings appear in this cloacal membrane, the anal canal and the urogenital sinus.

From the upper half of this primitive urogenital sinus is developed the adult bladder, the lower portion remaining as the prostatic urethra in the male and the whole urethra and vestibule in the female. By reason of the rapid growth of the bladder, the lower ends of the wolffian ducts are taken up in its growth, thus bringing the ureteral openings down on to the bladder floor. The wolffian ducts and the ureteral orifices gradually become separated. As the greater growth of the bladder occurs in its upper half, the ureteral orifices being superior in position are soon carried upward and laterally, leaving the wolffian ducts, in the lower narrow portion, to become the ejaculatory ducts in the prostatic urethra. In the female the lower narrow portion of the bladder becomes the urethra and vestibule of the vulva, and the orifices of the wolffian ducts are then obliterated.

The development of the two types of double ureter has been shown to arise from two different anomalous processes. The incomplete or branched ureter has been shown by Pohlman<sup>1</sup> to be due to a splitting of the

ureteral bud as or after it arises from the wolffian duct. The ureter bud normally divides to form the superior and inferior major calices after the primitive renal pelvis has grown into the lower end of the nephrogenic cord. Thus a premature splitting before it reaches the nephrogenic cells gives rise to the incomplete or branched ureter. Each division forms a separate pelvis, the upper pelvis as a rule being the smaller of the two, with fewer major calices. This division of the ureter takes place at any point between the ureteral bud and the renal pelvis, the commonest site according to Braasch<sup>2</sup> being in the upper third of the ureter. Cases have been reported in which the main ureter branched into three, four and even five divisions. These are really elongated calices, without the formation of a true pelvis. Kretschmer<sup>3</sup> and others have reported cases in which one branch of a bifid ureter ended blindly—evidently a lack of development of the nephrogenic cells forming the cap about its terminal dilatation or a failure of the ureter branch to meet these cells. This condition has been also thought by some to be a congenital diverticulum of the ureter.

Complete duplication has been thought to be due to a similar very early splitting of the ureteral bud, the twin ureters being so closely placed that, by the expansion of the lower end of the wolffian duct, they would be drawn on to the bladder floor as separate openings. Chwalla,<sup>4</sup> on the other hand, has shown that they are most probably due to the formation of twin ureteral buds, arising one above the other on the lower end of the wolffian duct. These twin ureters then grow upward and laterally, as does the single ureter, and meet the nephrogenic cells in the upper sacral region, forming separate renal pelves. The upper pelvis as a rule is the smaller. On the distance separating them depends whether the halves of the kidney are entirely separate, fused by connective tissue bands, or one solid mass of secreting kidney tissue. On the distance separating the pelves depends the blood supply, whether it is supplied by one main renal artery, a branched vessel, or separate renal arteries from the aorta.

Changes due to growth of the bladder occur in the lower ends of the ureters. In the drawing out of the lower ends of the wolffian ducts on to the bladder floor to form the trigon, the lower bud, that to the lower pelvis, reaches the bladder first and in the rapid growth of the bladder is drawn cranially and laterally away from the openings of the wolffian ducts. The ureter to the superior pelvis being drawn down at a later period, its orifice is in a lower and more medial position. This as a rule produces a crossing of the ureters, usually just above their insertion into the bladder wall. Additional crossings may or may not

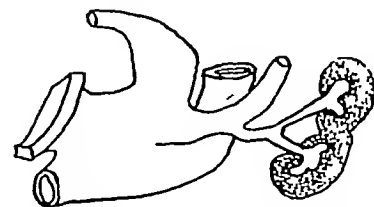


Fig. 3—Early branching of ureteral bud with formation of incomplete double ureter and pelvis.

occur, as the lower ureter is more redundant, owing to the rotation of the lower pole of the kidney through an angle of 45 degrees to reach the normal upright position.

Low implantation of the ureter to the upper pelvis at or near the vesical neck is due to the distance separ-

2. Braasch W. F. and Scholl A. J. Jr. *J. Urol.* 8: 507 (Dec.) 1922.

3. Kretschmer H. L. *J. Urol.* 30: 61 (July) 1933.

4. Chwalla R. quoted by Spitzer and Walin<sup>5</sup>.

rating the two ureteral buds. A high origin of the upper bud will retard its arrival on the bladder floor, so that it will open nearer to or even outside the vesical neck in the posterior urethra.

Similarly ectopic openings of the ureter depend on the same high origin of the upper bud. Their high position precludes an opening on the bladder floor and they retain their opening in the wolffian duct. In the

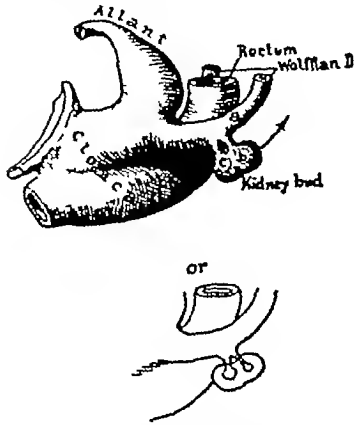


Fig. 4—Formation of twin buds in lower end of wolffian duct. Two separate ureters and pelvises—each capped by nephrogenic cells (Brödel)

male this brings about the anomaly of the ureter to the upper pelvis opening into the vas deferens, either above the seminal vesicle, in the region which ultimately dilates into the seminal vesicle or below it, in the ejaculatory ducts. In the female a high point of origin of the upper ureteral bud permits of the implantation of its orifice at any point in the shorter urethra. As the

vestibule arises from the lower half of the urogenital sinus it may also be implanted on its surface. If the upper ureter retains its opening in the wolffian duct in the female, it will remain attached to a duct which normally should degenerate and the opening of which should disappear from the floor of the urogenital sinus. In this case there are, I think, three possibilities. If the wolffian duct degenerates, the ureter will end in a blind cyst at some point between the urethra and the vagina, if it persists the ureter will open at the vestibular margin of the upper part of the hymen, or if the wolffian duct fuses with and opens into the lower end of the downgrowth from the muellerian duct it will open into the vagina.

Anomalies of these three types have been frequently reported. Spitzer and Wallin<sup>5</sup> believe that the supernumerary ureter, opening on to the vestibule or into the vagina, is due to persistence of the wolffian duct, the secretory tissue found about its terminal dilatation being persistent mesonephric tubules. This theory in the male would necessitate a longitudinal splitting of the wolffian duct with the formation of an additional tube and the persistence of tubules not otherwise retained in the formation of the epididymis. In the female one would expect the persistent mesonephric tubules to be situated in the broad ligament and not superior to the permanent kidney or metanephros.

From a clinical point of view, the anomaly of double ureter and pelvis is extremely important. It is a well recognized rule that an abnormal organ is more liable to disease than a normal one, so that the possibility of this duplication must be kept in mind in investigating all renal lesions.

Over a period of seventeen years in the Royal Victoria Hospital we have diagnosed sixty-three duplications of the pelvis and ureter. Of this number twenty-three were complete and three of these bilateral. The remaining forty were incomplete or branched in type, two of these being bilateral.

Of this total number only eleven, or 17.5 per cent, were discovered accidentally and were free from other disease. The remaining fifty-two were involved in an associated renal lesion. The lesions most frequently found were hydronephrosis or hydro-ureter, and infection, either alone or in combination.

There are of course in this condition of double ureter no symptoms per se, any symptom present being due to an associated lesion. Therefore the original finding of this condition was from autopsy material or at the operating table. With the invention of the cystoscope, complete duplications were found by the presence of additional ureteral orifices in the bladder. This is still the simplest method of diagnosis, but occasionally an additional orifice is overlooked, especially in the presence of marked inflammation, blood clot, diverticulum or an enlarged prostate. In this instance the pyelogram will aid, for the finding of a small or hypoplastic renal pelvis confined to one pole of the kidney will send us in search of the pelvis in the remaining segment. With the general use of pyelographic mediums it became possible to diagnose the incomplete or branched type of double ureter and pelvis. It has been shown by many previous writers that the most important procedure in the making of pyelograms is to withdraw the catheter well below the renal pelvis and to inject an additional amount of solution so that any branching ureter and pelvis may also be filled. In this connection it may be necessary to plug the ureteral orifice with a Garceau catheter, so that the solution will enter the narrow or constricted branch, especially if it branches near the ureteral orifice.

This procedure is borne out by our own figures, for in the first twelve years, out of twenty-seven cases, only eleven branched ureters were found, while in the last five years twenty-nine were diagnosed. Undoubtedly the diagnosis has been much simplified in the last few years by the additional use of excretion pyelography.

In the condition of an ectopic supernumerary ureter, the diagnosis at least in the female is often suggested from the history. In these cases, with an ectopic ureter opening into the urethra vestibule or vagina, the history of incontinence from birth accompanying an otherwise normal urination should provoke an earnest search for an additional orifice in one of these locations.

In certain cases incontinence is not a feature, as in Bruce's<sup>6</sup> and Muschat's<sup>7</sup> recently reported cases. In one an infected hydro-ureter set in force

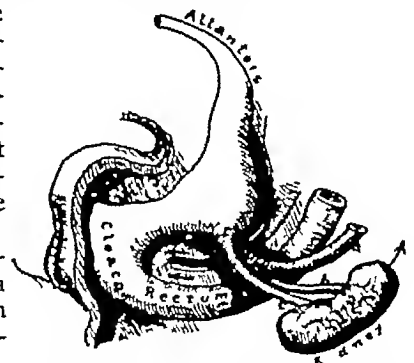


Fig. 5—Drawing down of lower ureter to bladder floor in expansion of the end of the wolffian duct to form the trigon (Brödel)

symptoms resembling a pelvic peritonitis, and in the other the cystic dilatation of the termination of the ureter in the urethra caused partial retention and urosepsis.

Excretion pyelography may or may not be of use in these cases, as the upper or diseased segment may not excrete sufficient of the iodine solution to cast a shadow. Similarly intravenous indigo carmine can be used in an

<sup>5</sup> Spitzer, W. M., and Wallin, I. F. *Ann Surg* 88:1053 (Dec) 1928

<sup>6</sup> Bruce, G. G. *Brit. J. Surg* 20: 672 (April) 1933

<sup>7</sup> Muschat, M. *Internat. Clin* 1:159 (March) 1934

attempt to find an additional orifice. This may fail, owing to the same lack of secretion and also because the supernumerary ureter is frequently obstructed with a marked slowing in the rate of excretion.

If an ectopic opening is found, it can usually be catheterized for sufficient distance to inject an iodide solution or even to collect a specimen for examination. The ureteropyelogram in these cases is typical—a tortuous and dilated lower ureter rising to the superior pole of the kidney and surmounted by a normal or dilated hypoplastic renal pelvis.

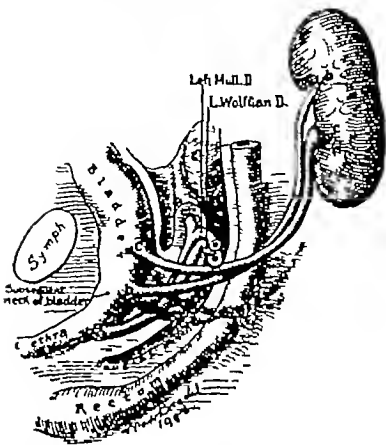


Fig. 6—Orifice of the lower ureter is drawn upward and laterally as the result of the growth in the upper half of the primitive bladder. Orifice of the upper ureter reaches bladder at later period and is lower in position on the trigon. Wolffian ducts remaining in the lower half of the original urogenital sinus become the ejaculatory ducts in the posterior urethra. (Brodel.)

In the male an ectopic ureteral opening is more difficult to diagnose and then only when the symptoms of infection, hydronephrosis, hematuria or calculus cannot be satisfactorily explained following the usual routine examination. Here with careful search of the posterior urethra, coupled with

the use of indigo carmine intravenously, the ectopic ureteral orifice may be found. Excretion pyelography may show the additional superior pelvis. At times the diagnosis may be suggested by the small pelvis found in the lower pole of the kidney shadow, even before the ectopic ureter is searched for.

The anatomic variations of the anomaly are many. The kidney may be of normal size and conformation or even slightly larger. The surface may be uniform or show a definite furrow or constriction at the junction of the two segments. This fusion may be complete or simply fibrous in nature or the two segments may be entirely separate. The superior portion then occupies the normal position with the inferior one at some lower level.

The blood supply to the two segments, according to corrosion specimens, is entirely separate, although only one main vessel may enter the kidney substance. If the distance separating the two pelves is increased, the blood vessels are more apt to branch before entering the kidney. At times individual arteries to each segment arise from the aorta.

The renal pelves are situated one superior to the other. The upper pelvis or, as it is sometimes called, the supernumerary or hypoplastic pelvis is as a rule smaller, with fewer major and minor calices. Even though it is smaller and apparently drains less kidney substance, Braasch states that the function of the two segments is equal.

The ureter varies of course as to whether it is a complete or an incomplete duplication. If complete, the ureter to the upper pelvis is as a rule straighter in course and somewhat narrower than its mate, which is usually wider and more liable to redundancy. They may cross one or more times or may lie side by side. Although usually having separate sheaths, they may be enclosed partially or completely in a common sheath.

The situation of their orifices in the bladder varies. They lie on or at the side of the ureteral ridge, the orifice of the ureter to the lower pelvis being superior or lateral, while that of the upper pelvis is medial and inferior. It is the latter orifice that is frequently displaced, either in a lower position on the trigon or near the vesical neck or in some abnormal position such as the urethra or vas deferens in the male, or the urethra vestibule or vagina in the female.

The incomplete or cleft ureters vary according to the region in which they divide, the commonest site being in the upper third. The branches may be of the same caliber or one of them may be larger than the other. Their openings into the main ureter may be free, although constriction of the opening of one branch is a frequent occurrence. Hydro-ureter and hydronephrosis are common sequelae. The ureteral orifice of a bifid ureter differs in no respect from the normal.

Triplication of the ureter has been reported as well as division of the main ureter into three, four and even five upper branches, the pelves in these cases being really the major calices. Double ureters both complete and incomplete are frequently found in cases of fused or horseshoe kidney.

From a pathologic point of view, any lesion that may be found in a normally developed kidney can of course be found in an anomalous double kidney. In fifty-two of our sixty-three double ureters, some pathologic lesion was present. The two predominating lesions were obstruction, with resultant hydro-ureter and hydronephrosis, and infection. Evidence of hydronephrosis was present in forty-eight of these pelves and ureters, and fifty of the fifty-two showed evidences of infection. In the majority of cases the lesion was one of infected hydronephrosis.

Of the fifty-two cases only thirteen were treated by operative measures, and these all belonged to the group of incomplete bifurcations. Seven were nephrectomies for pyonephrosis, in six of these the lesion involved both pelves. One involved only the lower pelvis, but the danger of microscopic invasion of the upper segment, with consequent secondary nephrectomy, prevented us from attempting a partial resection.

One nephrectomy was performed for a left renal tuberculosis, the upper pelvis was free from apparent infection, but on microscopic section tubercles were found in the parenchyma of the upper segment. One hydronephrosis of the lower segment with nephroptosis was treated by freeing adhesions about the point of bifurcation of the ureters, followed by nephropexy. There were two nephrectomies for calculous pyonephrosis and two pyelotomies for calculus in the lower pelves. Ureteral calculi were present in six cases, three in the complete double ureters and three

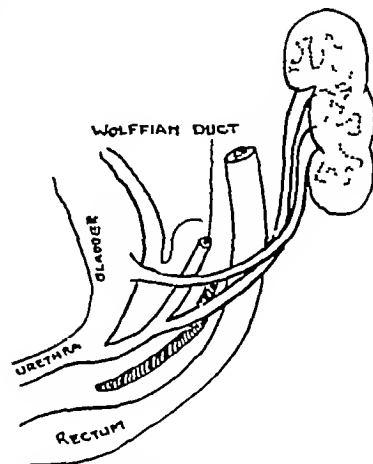


Fig. 7—High origin of the upper ureter bud causes failure to reach the bladder floor. The ureter to the upper pelvis then opens into the wolffian duct.

in the incomplete, all of which were passed either before or following ureteral dilation

Heminephrectomy was not performed in any of these cases, although many successful operations have been recorded by others over a period of years. In my opinion the extent of parenchymal invasion is difficult to ascertain grossly, the urine examination from the apparently normal pelvis often misleading, especially in cases of the incomplete or branched type. It is granted that the operation of heminephrectomy is ideal for the purpose of conserving kidney tissue in the presence of some lesion in the opposite kidney.

In the operative series, six involved the right kidney and seven the left. Three were in males and ten in females. The incomplete bifurcations in the upper third were twice as many as the branchings in the middle and lower thirds.

In the whole series we have found the lower pelvis more than twice as often involved in some lesion as in the upper. On the other hand, there have been no supernumerary ureters with an ectopic opening. It is a recognized fact that in these cases it is the upper pelvis that is the seat of infection and hydronephrosis.

In the small series reported I cannot offer figures of statistical value, many lesions not being encountered.

The treatment as far as the double ureter is concerned is really the treatment of the accompanying surgical lesion, for the ectopic supernumerary ureter, complete or partial ureterectomy with nephrectomy or heminephrectomy as the conditions indicate.

## SURGICAL TREATMENT OF ANOMALIES OF UPPER URINARY TRACT IN CHILDREN

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An anomalous organ is more prone to disease than a normal one. The incidence of anomalous development is highest in the urinary tract. If congenital narrowing of the urethral meatus is disregarded, anomalies occur more often in the upper than in the lower urinary tract. If anomalies exist in the lower urinary tract or in the genital system, the chances are better than one in three that the upper urinary tract is anomalous. The suggestive diagnostic corollary of this observation is at once apparent.

In the main, anomalies of the upper urinary tract are important as (1) the renal reserve is diminished, (2) the kidney is misplaced or malformed, (3) there is urinary obstruction or (4) there is abnormal discharge of urine (ectopic ureteral orifice). Chief interest focuses on the obstructive uropathy for it is here that one encounters (1) congenital hydronephrosis, which comprises the majority of all hydronephrosis in children, and, even more important if incidence and morbidity are the criteria, (2) chronic pyuria. In a series of 282 personal cases of hydronephrosis in infants and children, the lesion was secondary to an upper tract anomaly in 193 instances, or 68.8 per cent. In a series of 580 personal cases of persistent pyuria in the young—so-called chronic pyelitis—a total of 206 anomalies

of the upper urinary tract were demonstrated in 179 patients, or 30 per cent.

Presenting symptoms in anomalies of the upper urinary tract may be (1) persistent pyuria and its attendant syndrome,<sup>1</sup> (2) masses along the course of the upper tract (hydronephrosis or ectopic kidney) and rarely, (3) urinary discharge from an ectopic ureteral orifice or (4) uremia. Doubt concerning the nature of the loin mass entitles the patient to a complete urologic examination, as does failure of intensive medical therapy to cure chronic pyuria within four weeks.<sup>2</sup> The recognition of an ectopic ureteral opening may or may not require cystoscopic examination. Uremia may result from congenital paucity of renal parenchyma or may be due to renal destruction by obstruction, infection or stone. Its cause or causes in anomalous development of the upper urinary tract may be recognized only at autopsy. Yet early identification will sometimes enable the physician to preserve the child's life.

Fortunately, the majority of anomalies of the upper urinary tract are amenable to surgical treatment. Lack of space necessarily circumscribes the present consideration of therapy of these lesions. It is hoped, however, that interest may be created in the recognition and treatment of these common though usually unrecognized malformations, which directly or indirectly induce a high morbidity and mortality, which are in a large measure preventable. For example, in a protocol study of 26,480 autopsies (including 12,080 children) I<sup>3</sup> found 136 cases of ureteral reduplication, an incidence ratio of 1:195. Yet in the 580 children with chronic pyuria just referred to and subjected to complete urologic examination I found fifty-eight instances, or one in ten cases—nearly twenty times the normal incidence. Similar evidence concerning other anomalies (ureteral stricture, horseshoe kidney, ectopic kidney, and so on) can readily be adduced to show that anomalous development predisposes to disease.

Preoperative and postoperative surgical care in children demands the liberal administration of fluids, the free employment of blood transfusions and the prevention or combat of acidosis with dextrose. These considerations together with the conservation of body heat and a minimum of surgical trauma (sharp rather than blunt dissection, rigid hemostasis) will result in a surprisingly low mortality in radical surgery of the upper urinary tract even in extremely young children (tables 1 and 2). When children are given the supportive treatment just outlined they exhibit amazing recuperative powers. Because children's kidneys, injured by obstruction, commonly show a remarkable restoration of function when afforded free drainage, conservative renal operations may be employed disproportionately more often in the young than in adults. Delayed diagnosis and a radical operation are usually reciprocal. Urologists are repeatedly impelled to perform nephrectomy for advanced hydronephrosis in children in whom recognition of the lesion two years earlier would doubtless have meant preservation of the organ. This is particularly and commonly true in ureteral obstruction by aberrant vessels or congenital stricture.

In almost every case, open drop ether is the anesthetic of choice.

Anomalies and their surgical treatment here briefly considered are (1) kidney reduplication, abnormal

<sup>1</sup> In the present discussion we are concerned only with the ureters, pelvis and kidneys.

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<sup>3</sup> Read before the Section on Urology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1 Campbell M. F. Chronic Urinary Infection in Infants and Children. *J. A. M. A.* 99:2231-2234 (Dec. 31) 1932. Chronic Pyuria in Juveniles. *J. Urol.* 31:205 (Feb.) 1934.

2 Campbell M. F. Indications for Urological Examination in Infants and Children. *M. J. & Rec.* 133:392 (April 15) 1931.

3 Campbell M. F. Pediatric Urology (in completion).



mobility, polycystic, solitary cystic and horseshoe formation, (2) ureter reduplication, abnormal insertion, ureterocele, ectopic opening, blind ending, stricture, kink, valves and vascular obstruction (table 1)

# KIDNEY

Renal agenesis (1 662 in 26,480 autopsies<sup>3</sup>) is, of course, not amenable to surgical treatment. Rarely, an aplastic organ must be removed for pain or infection. The surgical importance of agenesis, aplasia or fused solitary kidney formation is that the only functioning parenchyma may be unwittingly excised. Preoperative urologic study, however, should prevent such a catastrophe. Congenital ectopic kidneys as distinguished from abnormally mobile organs are firmly held in position by an anomalous vascular supply defying any attempt to elevate the kidney. In a 12 year old girl with a fused pelvic kidney the renal mass caused suprapubic bulging and severe backache and deeply compressed the bladder. Belt suspension gave some relief.

**Congenital Abnormal Mobility**—This is rare. No operation is indicated unless there is urographic evidence of obstructive uropathy. Even with obstruction, ureteral dilation by bougie may suffice. When operation is indicated, nephropexy should be performed. Several methods are available.<sup>5</sup> I prefer Deming's<sup>6</sup> operation, which consists of making a hammock or sling for the kidney by carrying the anterior layer of the renal fascia and the posterior peritoneum back under the kidney, sewing them high to the quadratus lumborum. This operation spares the kidney from trauma, the renal capsule is not penetrated. I have been gratified with the results in the eight children in whom I have employed the operation, not always for abnormal renal mobility, however. The youngest patient was 5 months old.

**Polycystic Kidney**—This condition is seldom recognized during life in children and unless infection, hematuria, stone or obstruction demand intervention

TABLE 1—Surgical Treatment in Anomalies of the Ureter Pelvis and Kidney in Children 170 Procedures in 149 Patients

|                  | Nephrectomy | Uretero-nephrectomy | Ureteroheminephrectomy | Resection of Horseshoe Kidney | Nephrostomy | Nephropexy | Uretero-pyeloplasty | Resection of Aberrant Vessels | Ureterostomy |           | Bilateral Resection of Ureters | Transvesical Bilateral Ureteral Mictotomy | Fulguration Ureterocele | Ureteral Dilation | Ureteronecrosis-tomy (Vesical Diverticulectomy) | Exploratory |
|------------------|-------------|---------------------|------------------------|-------------------------------|-------------|------------|---------------------|-------------------------------|--------------|-----------|--------------------------------|---|-------------------------|-------------------|---|-------------|
|                  |             |                     |                        |                               |             |            |                     |                               | Unilateral   | Bilateral |                                |   |                         |                   |   |             |
| Kidney           |             |                     |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Agenesis         |             |                     |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Reduplication*   | 3           | 1                   | 8                      |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Horseshoe        |             |                     |                        | 1                             |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Ureter           |             |                     |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Reduplication†   |             |                     |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Ureterocele      |             | 4                   |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Ectopic opening  |             | 1                   | 4                      |                               |             |            |                     |                               |              |           |                                |   | 8                       | 7                 | 4   |             |
| Stricture        |             |                     |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Ureterovesical   |             | 9                   | 5                      |                               | 5           | 1          |                     |                               | 2            | 8         | 8                              | 6   |                         |                   |   |             |
| Ureteropelvic    | 19          |                     |                        | 1                             | 5           | 5          | 7                   |                               |              |           |                                |   |                         | 60                | 1   |             |
| Body ureter..    | 1           |                     | 1                      |                               |             |            |                     |                               |              |           |                                |   |                         | 4                 |   |             |
| Kink             |             |                     |                        |                               |             | 1          |                     |                               |              |           |                                |   |                         |                   |   |             |
| Aberrant vessels |             |                     |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Ureteropelvic    | 8           |                     |                        |                               |             | 1          |                     | 3                             |              |           |                                |   |                         |                   |   |             |
| Lower ureter     |             |                     |                        |                               |             |            |                     | 1                             |              |           |                                |   |                         |                   |   |             |
| Congenital atony |             | 1                   |                        |                               |             |            |                     |                               |              |           |                                |   |                         |                   |   |             |
| Total‡           | 23          | 15                  | 9                      | 1                             | 10          | 8          | 7                   | 4                             | 2            | 8         | 8                              | 6   | 8                       | 72                | 4   | 1           |

\* Hemipyonephrosis

† See kidney

‡ Duplications allowed three deaths ureteronephrectomy resection horseshoe kidney, ureterostomy

Kidneys in low ectopy are best attacked by low extraperitoneal approach. Pelvic kidneys are best approached transperitoneally and, unless there are strong contraindications, nephrectomy is the procedure of choice.

**Reduplication**—This common anomaly (1 195)<sup>4</sup> permits renal resection when only half of the reduplicated organ is surgically diseased. Half a kidney—usually capable of supporting life by itself—is preserved. As a rule, the preoperative urogram will indicate the practicability of this operation and may be of aid at the operating table.<sup>4</sup> In about half of the cases there is demarcation between the two halves of the organ, either a groove or a striking difference in cortical appearance. Frequently the diseased portion is wrinkled or scarred. I have encountered eleven cases of hemipyonephrosis in infants and children, in eight of which ureteroheminephrectomy was satisfactorily performed. Usually the remaining segment of the kidney was suspended. In three instances of hemipyonephrosis nephrectomy seemed indicated, as it is likely to be when both of the reduplicated pelvis show disease which conservative treatment or operation cannot be expected to cure. The youngest patient in whom I performed renal resection was 5 months old.

the patient is best left alone, meanwhile being treated as having nephritis. If profuse hematuria cannot be checked by blood transfusion or the intrapelvic injection of 5 per cent silver nitrate or if there is extreme renal pain, nephrectomy or puncture of the larger cysts must be considered. With nephrectomy a half and with nephrotomy a third will die within the first postopera-

TABLE 2—Ages of Patients in Table 1

|             |     |
|-------------|-----|
| 0-6 months  | 9   |
| 7-12 months | 24  |
| 1-3 years   | 43  |
| 4-6 years   | 34  |
| 7-10 years  | 26  |
| 11-13 years | 13  |
| Total       | 149 |

tive month. In general, the less surgical treatment is employed in polycystic renal disease the longer will the patient live. A large solitary renal cyst should be resected unless the entire organ is destroyed.

**Horseshoe Kidney**—Heminephrectomy by division of the organ through the isthmus is the treatment of

4 Campbell, M. F. Hemipyonephrosis in Infants and Children. *Am. J. Surg.* 21:85 (July) 1933. Ureteroheminephrectomy in Infancy. *J. Urol.* 26:433 (Sept.) 1931.  
5 Edebohl's. *Am. J. Obst. & Gynec.* 31:161 1895. Bundschuh E. *Zentralbl. f. Chir.* 62:751 (April 4) 1925. Lowsley, O. S. and Bishop C. C. *Surg., Gynec. & Obst.* 57:494 (Oct.) 1933. Meilen, D. R. *Nephropexy by Means of a Fascial Hammock.* *J. A. M. A.* 100:1167 (April 15) 1933. Strode, J. E. *J. Urol.* 32:171 (Aug.) 1934.  
6 Deming C. L. *Nephropexy.* *J. A. M. A.* 95:251 (July 26) 1930.

advanced unilateral disease in this anomaly I did this in a 10 year old girl with a reduplicated right half of a horseshoe kidney. The outlet of the upper pelvis of the reduplicated right side was densely strictured, thereby converting the pelvis into a cyst holding more than 1 liter. This girl's death from shock affords two important surgical lessons. With large fluid renal tumors, in children at least, a two stage operation—(a) initial evacuation of the fluid collection by indwelling ureteral catheter or by nephrostomy, followed at a later date by (b) nephrectomy—will often avoid fatal shock. I observed this shock phenomenon also in a girl, aged 13 months, with a massive perirenal hydronephrosis<sup>7</sup> the sudden evacuation of which was promptly followed by fatal shock. Since then I have employed initial decompression of large renal fluid collections successfully in three children. Moreover, in the 10 year old girl a large aberrant vessel was accidentally lacerated close to the aorta and high under the liver, this caused alarming bleeding, which was checked with difficulty. Despite voluminous transfusion and other supportive measures, the child died three days later.

#### URETER

*Reduplication*—Ureteral duplication is the fundamental condition in renal reduplication and what has been said regarding the latter applies to double ureter.

*Abnormal Insertion*—Occasionally the insertion of the ureter into the renal pelvis is unusually high, giving rise to a spur-valve formation at the junction. Unless mobilization of the ureteropelvic junction and high suspension of the kidney afford normal drainage (and it is almost certain that they will not) the ureter should be reinserted low in the pelvis (ureteropyeloneostomy) to permit dependent drainage. Excision of the spur-valve is not satisfactory. Nephrectomy is frequently demanded.

*Ureterocele*—Sometimes designated as intravesical cyst of the ureter, ureterocele is important only because the ureteral orifice is almost always minute. In other words, obstruction is the essential lesion. I encountered ureterocele in nineteen instances in 580 children with persistent pyuria. Occasionally it is sufficient to dilate the tight ureteral orifice with bougies. As a rule, however, it is necessary to split the ureterocele wider with a cystoscopic electrode or, in cases not amenable to this treatment, by direct incision through the open bladder. In a 6 year old girl I amputated an enormous ureterocele, taking a running hemostatic suture around the excisional margin.

*Ectopic Ureteral Opening*—This condition requires surgical treatment only when the renal segment drained by the ectopic orifice is diseased or the anomaly produces incontinence. Although a single ureter may have an ectopic orifice, the abnormal opening is usually that of the ureter from the upper pole of a reduplicated kidney. In most instances this portion of the organ is diseased. When the ureter is single and the kidney is worth saving, transplantation of the ureter to the bladder (ureteroneocystostomy) is indicated. When the ectopic ureter is from a reduplicated kidney, ureteroheminephrectomy is the usual indication. I performed ureteroheminephrectomy in four children and ureteronephrectomy in one with an ectopic ureteral orifice and chronic pyuria. In two other instances operation was refused. The youngest patient operated on was 5 months old. One of these patients, a girl of 13 months,

had bilateral ureteral reduplication. The ureter from the right upper pelvis opened into the posterior urethra, that from the pyonephrotic left upper pelvis opened in the vestibule just below the urinary meatus. Left ureteroheminephrectomy was successfully performed. The right side required no treatment since there was neither notable infection nor urinary incontinence.

*Blind Ending Ureter*—This lesion is important only when the ureter ends blindly below and the ureter and pelvis are converted into a cystic mass which may simulate an abdominal tumor. Excision is the treatment, this may require nephrectomy or ureteroheminephrectomy.

*Stricture*—In the absence of superimposed infection, congenital ureteral stricture seldom shows scarring. Rather there is narrowing of the lumen of the duct comparable to the congenital narrowings not infrequently seen in the intestinal tract, in the biliary duct and in the urethra. The order of incidence of congenital ureteral stricture is (1) ureterovesical junction, (2) ureteropelvic junction and (3) the body of the ureter. Ureteral stricture was demonstrated in 101 of 580 cases of chronic pyuria in children (right forty-seven, left thirty-one, bilateral twenty-three). It was at the ureterovesical junction in fifty-seven of these, at the ureteropelvic junction in forty and in the body of the ureter in fourteen. Hydronephrosis results from clinically important stricture, the nearer the stricture approaches the kidney, the greater and more rapid will be the hydronephrotic destruction.

*Stricture at the Ureterovesical Junction*—If mild, these lesions may be dilated by bougies passed through a cystoscope. In infants, this dilation must usually be performed by the passage side by side of two, three or more 4 F catheters. I have recently devised a dilating cystoscope of 17 F caliber which permits the passage of a 10 F bougie, and in my hands this equipment has greatly facilitated the nonsurgical treatment of ureteral stricture in infants and children. If the stricture at the ureterovesical junction is extremely tight or dense, as evidenced by inability to pass a filiform catheter or by failure of the stricture to respond to dilation, the lesion should be cut transvesically through the open bladder,<sup>8</sup> as I have in six children. In four of these cases the preoperative condition of the patient was desperate, preliminary bilateral ureterostomy or nephrostomy was performed. Division of the ureteral stricture was postponed until restitution of renal function permitted further operative steps. In two of these cases bilateral resection of from 4 to 6 inches of redundant ureter and end-to-end anastomosis accompanied the transvesical ureteral meatotomy. These two patients were boys and when surgical treatment was begun were 7 and 10 months of age respectively. In the last instance the phenolsulfonphthalein output was zero in two hours and the nonprotein nitrogen was 138 mg per hundred cubic centimeters of blood. At intervals of approximately two months (a) bilateral ureterostomy and suprapubic cystotomy, (b) transvesical ureteral meatotomy, (c) bilateral ureteral resection with end-to-end anastomosis and (d) transurethral resection of congenital valves of the prostatic urethra were successively carried out. At the age of 18 months the blood chemistry was normal, the phenolsulfonphthalein output was 50 per cent in two hours, and the urine contained only a small amount of pus. Three years postoperatively the boy's development is normal.

<sup>7</sup> Campbell, M. F. Perirenal Hydronephrosis. *Am. J. Surg.* 19: 523 (March) 1933.

<sup>8</sup> Campbell, M. F. Congenital Bilateral Ureterovesical Junction Stricture in Infants and Children. *J. Urol.* 26: 529 (Oct.) 1931.

**Stricture of the Body of the Ureter**—This will usually respond to cystoscopic ureteral dilation. Rarely the stricture is inflammatory and surrounded by periureteral sclerosis, the liberation from which may enhance the results of instrumental dilation. Plastic operations on the body of the ureter for stricture can scarcely be expected to be successful.

**Stricture at the Ureteropelvic Junction**—This lesion in children commonly produces early hydronephrotic destruction of the kidney, which demands nephrectomy. Occasionally the lesion is bilateral, as in two young patients of mine, or involves a congenital solitary kidney, as in a boy of 5 years (1,200 cc hydronephrosis). Only permanent nephrostomy drainage preserved their lives. In the boy with the solitary kidney, ureteropelvioplasty was defeated by infection. My experience with ureteropelvioplasties in children (eight cases) has not been encouraging. Plastic methods available included the Heinecke-Mikulicz principle (longitudinal incision through the stricture with transverse suture), the Finney pyloroplasty type of operation, the Ramsted pyloroplasty type of procedure (cutting through the narrowed ureteral wall down to but not penetrating the mucosa), or the Schwyzer-Foley<sup>9</sup> operation (Y-plastic), which has given such satisfactory results in adults. When the hydronephrosis is advanced, preliminary indwelling catheter drainage of the pelvis or nephrostomy is advisable until the recuperative power of the kidney has been determined. If the renal function is not restored to at least half normal, or if infection is well established, nephrectomy is usually the operation of choice when the condition of the renal mate permits.

**Kinks**—Congenital ureteral kinks are indeed rare. They are almost always found where the ureter leaves its peritoneal attachment to pass to the kidney. In monovular twins seen at autopsy at Bellevue Hospital a sharp S-shaped kink was found at precisely the same point in each upper left ureter.<sup>10</sup> There were also identical transduodenal bands. I have seen but one child, a girl of 5 years, who required operation for congenital ureteral kink. There was no distal obstruction. The kink, located at the level of the third lumbar transverse psoas, appeared identical in both the excretory and retrograde pyelograms and at operation was found firmly fixed by a dense band of scar, which crossed from the lower pole of the kidney to the spine. A mild hydronephrosis resulted. The only symptom was constant pain in the loin and this was cured by mobilization of the angulated ureter and nephropexy. Nevertheless, ureteral dilation has been periodically performed since operation, now once in six months.

**Aberrant Vessels**—Only those vessels which compress the ureter are of importance here.<sup>11</sup> In almost every instance they will be found to be lower polar vessels passing to the renal artery or vein, the aorta or vena cava, or the common iliac artery or vein. Yet I have a proved case of vascular obstruction of the lower ureter, diagnosed preoperatively, in a girl of 13 months, and in three other children this seemed the likely diagnosis but lacked confirmation. In the girl an artery, a vein and a dense fibrous band compressed the ureter 1 cm above its junction with the bladder. The

vessels were believed to be anomalous uterine vessels. Following division of these structures the ureter promptly filled out at the point of constriction, and five years later the child's development is normal, as is the urine. She is living by the kidney previously obstructed by the anomalous vessels, ureteronephrectomy for advanced ureteropyonephrosis having been necessary on the opposite side. Howze's<sup>12</sup> patient, aged 1 year, had a similar condition, ureteronephrectomy was required.

In cases of aberrant vessel obstruction, nephrectomy is indicated when the kidney is not worth saving. If a conservative operation is permissible, obstructing veins may be freely cut. An obstructing artery that supplies not more than a fourth of the kidney may be severed. Cyanosis or blanching of the parenchyma following compression of the anomalous vein or artery will indicate the vascular distribution. If the artery cannot be sacrificed, elevation of the kidney, plastic manipulation of the pelvis, or ureteropyeloneostomy to circumvent the vessel will be required to relieve the pressure on the ureter. Sometimes free mobilization of the ureter and the constricting vessel with high suspension of the kidney suffices. In thirteen children with vascular obstruction of the ureter operated on by me, resection of the vessels only was done in two, vascular resection and nephropexy in two, and nephrectomy for advanced renal destruction in nine. The youngest was 14 months of age.

**Other Anomalies**—Ureteral diverticulum is extremely rare. In Rathbun's<sup>13</sup> patient, a 10 year old boy, ureteral diverticula adjacent to the bladder were bilateral. The sacs were excised and the ureters were reimplanted into the bladder. Spiral twists or torsion of the ureter are not amenable to surgical treatment. Only future studies will demonstrate whether sympathectomy will be of value in the treatment of congenital dilatation of the upper urinary tract.

Ureteral valves are common in the new-born but almost always disappear by the end of the first year. The lesion has never been recognized in time to render nephrectomy unnecessary. Should the lesion be recognized, excision of the mucosal fold through the opened ureter is indicated. When the ureter opens into a vesical diverticulum, diverticulectomy with transplantation of the ureter to the bladder is indicated unless, by a plastic maneuver, the floor of the diverticulum surrounding the ureteral orifice can be brought in to form part of the bladder wall. The last method was successful in a 5 year old boy, and ureteroneocystostomy following diverticulectomy was remarkably satisfactory in boys of 4 and 14 years.

#### SUMMARY

Although the natural recuperative powers of the kidneys in the young favors conservative surgical procedures, delayed diagnosis of the commoner anomalies of the upper urinary tract too often renders nephrectomy necessary. With (1) attention to preoperative preparation, (2) conservation of the body heat, rigid hemostasis and a minimum of surgical trauma during operation, and (3) considerate postoperative care, the youngest patients may successfully and relatively uneventfully be carried through radical surgical attack on the upper urinary tract (table 1).

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<sup>9</sup> Schwyzer, Arnold, quoted by Foley, F. E. B., in discussion on Beer, Edwin, Further Experience with Aseptic Nephro-Ureterectomy, *J. Urol.* 29: 148 (Feb.) 1933.

<sup>10</sup> Campbell, M. F., Ureteral Obstruction in Juveniles, *Am. J. Surg.* 51: 445 (Nov.) 1928.

<sup>11</sup> Campbell, M. F., Vascular Obstruction of the Ureter in Juveniles, *Am. J. Surg.* 22: 527 (Dec.) 1933.

<sup>12</sup> Howze, C. H., Personal communication to the author.  
<sup>13</sup> Rathbun, N. P., Diverticulum of the Ureter, *J. Urol.* 17: 329 (March) 1927.

## ECTOPIC PELVIC KIDNEY

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AND

J. C. BARTON, M.D.

MINNEAPOLIS

An ectopic kidney is one that is congenitally displaced and has never occupied a normal position. An ectopic pelvic kidney is one that is fixed within the bony pelvis or across the spine and derives its blood supply from the adjoining large vessels, such as the iliac arteries.

## EMBRYOLOGY

If one examines the embryo when the kidneys and ureters first make their appearance, one will find the axis of the kidney perpendicular and the pelvis anterior. Shortly thereafter, the kidney and its pelvis begin to rotate mesially and the upper pole turns laterally. When the axis remains at an angle or turns horizontally across the embryo, a horseshoe kidney may develop. Normally at about eight weeks the kidney reaches the relative position it will occupy at birth and is usually covered with the adrenal gland above with the sex gland below. Our study of the embryology indicates that the development of an ectopic pelvic kidney must occur before the eighth week, because at approximately this time the normal developing kidney obtains its permanent blood supply, which is from vessels well up on the aorta while the permanent blood supply of the pelvic ectopic kidney is from one to ten primitive vessels usually arising from the iliac arteries.

## THE INCIDENCE OF ECTOPIC KIDNEY

Dorland<sup>1</sup> in 1911 published a review of the literature together with descriptions of and comments on cases of ectopic kidney that he had observed. Before 1890 he found few reports of pelvic ectopic kidneys in the literature or in discussions of surgical conditions. During this period this anomaly was infrequently recognized before operation or autopsy, because cystoscopic examinations were not common. With the increasing use of cystoscopy after 1890 the reports of ectopic kidneys were more frequent. The incidence of congenital anomalies of the whole genito-urinary tract before 1897 was one specimen in 1,500 autopsies, while the incidence of ectopic kidney was four specimens in 6,536 autopsies.

In 1910 one ectopic kidney specimen was obtained from 882 autopsies.

In 1923 Stewart and Lodge<sup>2</sup> reported three pelvic kidney specimens from 6,500 autopsies, an incidence of one in 2,166.

In 1930 Meredith Campbell,<sup>3</sup> who published a complete survey of this condition, collected reports of 47,477 autopsies, among which there were seventy-two ectopic kidney specimens, an incidence of 1/660.

In our series of 22,000 autopsy reports<sup>4</sup> obtained from the Pathological Department of the University of Minnesota Medical School from the University Hospital, Glen Lake Sanatorium, and from our private practice, we found twenty-two ectopic kidneys, an incidence of 1/1,000. Seven of these were pelvic, three

were lying across the brim of the pelvis proper and the remainder were in the lower iliac fossa.<sup>5</sup>

During 3,285 urologic examinations made over a six year period we were able to find six ectopic kidneys, an incidence of one in 547.

In 1924 Darner,<sup>6</sup> in a review of the literature, reported the finding of sixteen bilateral ectopic kidneys, none of which were fused, which is unusual. Another tabulation of 331 ectopic kidney specimens found at autopsy revealed that 6.3 per cent were bilateral, 24.4 per cent on the right side and 69.2 per cent on the left side. Bilateral ectopic pelvic kidney occurs infrequently. Bugbee<sup>7</sup> found reports of twenty-three cases of single ectopic kidney, two of these were infected.

An examination of clinical reports reveals that, among 594 operations made on kidneys and ureters, three ectopic kidneys were found.

Our complete review of the cases reported in the literature, both from the autopsy room and from clinical observations, shows that the incidence of pelvic kidney is frequent enough to demand clinical consideration. Many of the early cases that were recognized before autopsy were pelvic kidneys that interfered with

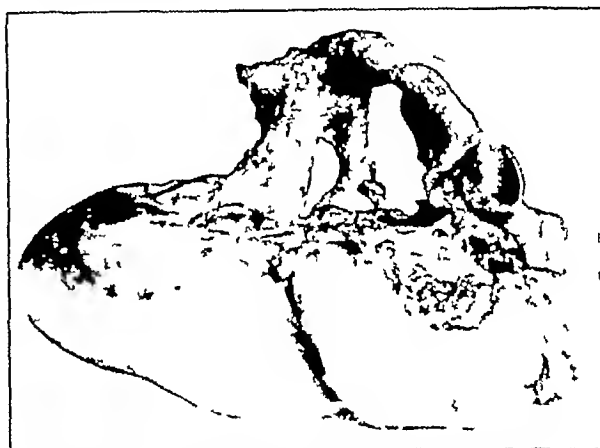


Fig. 1.—An ectopic pelvic kidney recently removed with three extra renal pelves which join to form one ureter.

pregnancy and later became a menace, requiring surgical removal so that normal delivery might occur.

The perfection of the cystoscope, improvement in ureteral catheters, and more recently the use of intravenous urography have increased the incidence of ectopic pelvic kidney. We believe that this condition should be thought of and sought for by every urologist during routine urologic examinations.

## ANOMALIES OF POSITION AND COMPLICATIONS

The ectopic kidney may be displaced so that it occupies the chest cavity, and it may herniate through the inguinal canal. An ectopic kidney may be associated with hypertrophy of the prostate, with the resulting complications of this distressing condition. The appendix is frequently removed to relieve pain produced by ectopic pelvic kidney. We found one report of a cystic ectopic pelvic kidney in a 14 months old child. This tumor was just back of the symphysis and could be palpated, but the tumor itself was retroperitoneal. Hypernephromas may occur, and some writers have reported tuberculosis in pelvic kidneys.

Read before the Section on Urology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

<sup>1</sup> Dorland W. A. N. *Surg. Gynec. & Obst.* 13: 303-319, 1911.

<sup>2</sup> Stewart W. J. and Lodge S. D. *Brit. J. Surg.* 11: 27 (July) 1933.

<sup>3</sup> Campbell M. F. *J. Urol.* 24: 157-198 (Aug.) 1930.

<sup>4</sup> Bell E. T. Personal communication to the authors.

<sup>5</sup> A more detailed report of these kidneys will be published by Dr. E. T. Bell, head of the Department of Pathology, University of Minnesota Medical School.

<sup>6</sup> Darner H. L. *J. Urol.* 12: 193-214 (Sept.) 1924.

<sup>7</sup> Bugbee H. G. and Loce J. P. *Surg. Gynec. & Obst.* 28: 97 (Feb.) 1919.

As already stated, many normal pregnancies have been complicated by pelvic ectopic kidney. One report of twenty-eight labors contained two maternal and five fetal deaths. Abortions occur very frequently as a result of ectopic pelvic kidneys that are mistaken for cysts of the ovary or some other condition in the female genitalia.

#### DIAGNOSIS

The diagnosis of ectopic pelvic kidney is not difficult, though comparatively few cases were discovered before

#### *Incidence of Ectopic Kidneys Following Autopsy and in the Authors Clinical Experience*

| Year                                  | Reported by       | Ectopic Kidneys | Autopsies             |
|---------------------------------------|-------------------|-----------------|-----------------------|
| 1872-1882                             | Guy's Hospital    | 5               | 4,632                 |
| 1873-1897                             | Morris            | 4               | 6,538                 |
| 1897-1930                             | Meredith Campbell | 72              | 47,477                |
| 1923                                  | Stewart and Lodge | 3               | 6,500                 |
| 1930                                  | Bell              | 22              | 22,000                |
| Total                                 |                   | 106             | 87,145                |
| Incidence 1/822 autopsies             |                   |                 | Urologic Examinations |
| 6-yr period                           | Authors           | 6               | 328                   |
| Incidence 1/547 urologic examinations |                   |                 |                       |

operation or autopsy. Recent clinical reports indicate that this condition is being discovered more often than previously. The pyelo-ureterogram by either the retrograde or the excretion method will clinch the diagnosis. When indications are present for urologic study, both kidneys and both ureters should always be catheterized. Urine specimens should be obtained from both sides and bilateral ureteropyelograms are always indicated.

With this technic, we feel more congenital ectopic pelvic kidneys will be discovered. The difference between the incidence of clinical cases and autopsy reports indicates that many ectopic kidneys may pro-

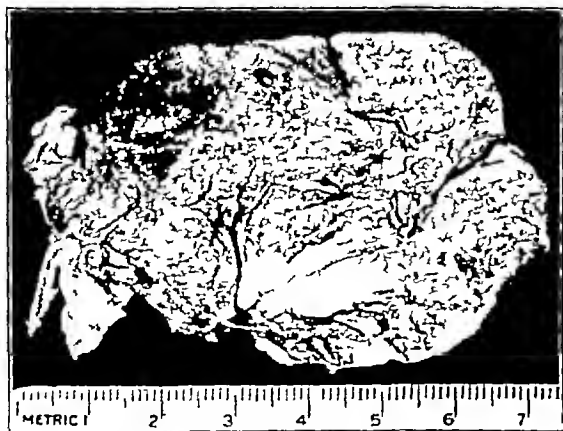


Fig 2—Typical flat pan-cake shaped pelvic kidney

duce no symptoms and, therefore, are never discovered. In one of Judd's<sup>8</sup> reports, of nineteen pelvic kidneys only ten required surgery. The others were discovered during operation for other conditions and produced no symptoms that required relief by surgical means. In the cases of ectopic pelvic kidney that we have observed there were urinary symptoms that were referable to the condition present.

#### TREATMENT AND OPERATIVE PROCEDURE

The treatment of this condition is nephrectomy if a good kidney is present on the other side. The symptoms are due to interference with drainage from the kidney, which produces a hydro-ureter and hydronephrosis, later with infection. Calculi may be present in the renal pelvis or ureter. As mentioned, a number of these cases do not require surgery, since the drainage seems to be adequate and infection has not occurred.

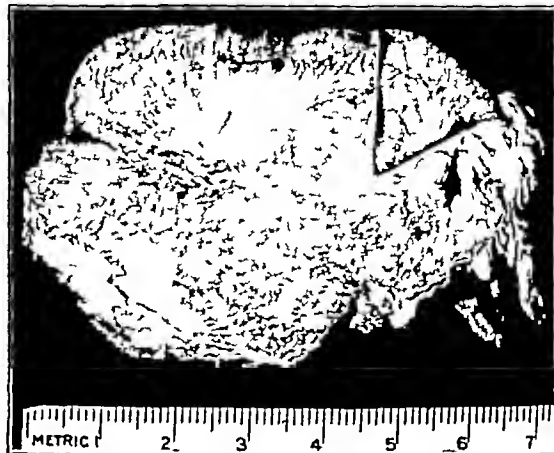


Fig 3—Section of the same kidney

There is no reason why a kidney that is fixed in the pelvis and functioning normally should be removed unless it is interfering with the growth or function of other organs.

When an ectopic kidney appears above the crest of the ilium, it is sometimes possible to anchor it in its usual position so that interference with drainage from the pelvis and through the ureters may be corrected. This is impossible with a pelvic ectopic kidney, because the blood supply that comes from the iliac vessels or from vessels in the pelvis will prevent the replacement of the kidney in a normal position.

We have had the opportunity of examining and operating on six ectopic pelvic kidneys. The simplest method of approach, in our opinion, is extraperitoneal. The position of the kidney and the large number of blood vessels that are frequently found make the transperitoneal approach undesirable. An incision may be made laterally through the abdominal wall and the peritoneum reflected inward. In our experience, the exposure of the ureters and the numerous vessels is comparatively easy and the nephrectomy not difficult. These kidneys, when removed, are congenitally deformed and are shaped like a pancake. The renal pelvis is usually anterior, though it may be inferior. In one of our cases there were six calices, and in one instance the pelvis seemed to be divided from the upper to the lower pole of the kidney.

#### CONCLUSIONS

1. An ectopic kidney is one that is congenitally displaced and has never occupied a normal position. An ectopic pelvic kidney is one that is fixed within the bony pelvis or across the spine and derives its blood supply from the adjoining large vessels and the iliac arteries.

2. Ectopic pelvic kidney is a defect of embryologic development and occurs before the eighth week.

3. The incidence in congenital ectopic kidney is one in 822 autopsies, and one in 547 urologic examinations.



# DISCUSSION ON GENITO-URINARY ANOMALIES

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NUMBER 3

- 4 Ectopic pelvic kidney must be considered when pelvic tumors are found in both sexes, and in the female when abortions occur or when normal pregnancies are interfered with by some abdominal or pelvic mass
  - 5 The diagnosis requires cystoscopy, ureteral catheterization, and bilateral pyelo-ureterograms
  - 6 Congenital ectopic pelvic kidney may be symptomless
  - 7 Treatment consists of nephrectomy if symptoms are produced by the ectopic kidney, provided the contralateral kidney is normal. If no symptoms are produced, if drainage is good and if no infection is present, nephrectomy is not indicated. The extraperitoneal approach is satisfactory and safe
- 1009 Nicolett Avenue.

## ABSTRACT OF DISCUSSION

ON PAPERS OF DR. GUTIERREZ, HAWTHORNE, CAMPBELL,  
AND THOMAS AND BARTON

DR. VINCENT J. O'CONOR, Chicago. The more universal adoption of routine urologic examinations has brought out the fact that the anomalies of the upper urinary tract are not only common but often the underlying cause of obstruction and infection. Congenital solitary kidney that is the seat of stone, hydronephrosis or infection is not infrequently a clinical problem. Experience has shown that corrective conservative operations on these kidneys may be safely carried out with an operative mortality of no greater degree than the extent of renal destruction would warrant in the case of both kidneys being present. Nephropexy and nephrolysis is a valuable procedure in some of these cases. During the past year I have encountered complete postrenal anuria in three patients with impacted stone in the upper ureter of a congenital solitary kidney. In made uneventful convalescence after ureterolithotomy. In surgery of the solitary kidney it is important to minimize the operative trauma and to provide free urinary drainage, and often it is advisable to decapsulate the kidney. I have encountered unilateral pelvic ectopia of the right kidney in three women and two men. All were hydronephrotic kidneys and the patients had had a prior appendectomy without relief of pain. In two cases dystocia was a prominent feature. In one of these patients a cesarean section had to be performed and six months later I removed a large hydronephrotic kidney from the hollow of the sacrum because of persistent pelvic pain. Urography is the only accurate preoperative method of establishing the diagnosis of ectopia. The double ureter, either complete or incomplete, is the most frequent anomaly seen clinically. My records show thirty-two incomplete and nine complete duplications of the ureter. Two of the complete duplications were bilateral with four ureteral orifices in the bladder. In my experience the pathologic changes have been located in the lower segment of the kidney in about 90 per cent. The upper half does not seem to be subjected to the obstructive lesions as does the lower half. Heminephrectomy is an established surgical procedure in these cases when the diseased portion is accompanied by a good functioning fellow half. I have performed this operation nine times without complication. Complete excision of the ureter, if it is incompletely duplicated must accompany heminephrectomy. Excretion urography has been a great aid in many of these cases but ureteral catheterization and retrograde pyelography are necessary to complete the diagnosis in most instances. Dr. Campbell's high proportion of anomalies present in infants with persistent pyuria emphasizes the necessity for careful complete urologic examination.

DR. WILLIAM P. HERBST, Washington D. C. In aplasia of the renal parenchyma one must always be sure before one removes a kidney that there is a good kidney on the other side. Just because there happen to be ureteral orifices in the bladder does not necessarily mean that there is a functioning kidney. I had one instance recently in which there was a relatively aplastic nubbin-like kidney that had previously been treated for pyelonephritis without the diagnosis being made. Dr.

Campbell's paper demonstrates the fact that he has had unusual opportunity of doing a great amount of work on children. He highly recommends the Deming nephropexy, and in his hands it unquestionably works well because he has satisfactory results. I myself have been hesitant to use that particular type because I feel that, when one makes a hammock under the kidney one automatically makes the hazard of having the kidney fall over an angulated ureter and produce obstruction. His plastic work at the ureteropelvic juncture has been comprehensive, but there is one very important consideration that should not be lost sight of, which is that the tissues must be good. In attempting to do plastic work on pelvic and ureteral tissue that is nothing but scar tissue one is bound to end with failure. His method of decompression of large collections of fluid is one of the most valuable suggestions that have been offered for some time, and his utilization of this method is particularly valuable in children. Children do not always withstand surgical operations satisfactorily, particularly in the first twenty-four or forty-eight hours, and with the very careful handling of his young patients he has unquestionably been more successful with them than he would have been had he not taken unusual precautions. The extraperitoneal approach of Drs. Thomas and Barton in the handling of ectopic kidneys is very valuable, although opinion seems to be divided. Some advise the transperitoneal and some the extraperitoneal approach. Unquestionably, in their hands the extraperitoneal has been very satisfactory and certainly recommends itself because one may stay out of the peritoneal cavity. Their one picture showed what appeared to be a very markedly dilated hydronephrotic kidney and hydro-ureter with intravenous urography, but with retrograde urography it was demonstrated to be an ectopic kidney with a ureter entirely different from the original impression. The work of Dr. Hawthorne gives a comprehensive insight into the etiology of these anomalies. His attitude on the handling of these double kidneys, when he says that he doesn't do heminephrectomy, I think will possibly be revised in the future, because of the practical importance of saving good tissue.

DR. MOSES SWICK, New York. Excretion urography is invaluable in the presence of obstructive lesions of congenital origin, or of lesions either obstructive or infectious superimposed on congenitally anomalous conditions, under which circumstances cystoscopy and retrograde pyelography may be mechanically impossible or dangerous. It is especially well adapted to cases presenting obscure abdominal symptoms and conditions in which one is adverse to or hesitates to subject a patient to the retrograde route of investigation. For example, the differentiation of abdominal masses, whether of intra-urinary or extra-urinary origin, has been frequently facilitated by this method of approach. In this fashion the recognition of congenital solitary kidney, ectopic fused kidney and dystopia of the kidney has been most important to the internist, the surgeon and the urologist. Children in whom pyuria has usually been attributed to pyelitis have been found to be suffering from infections superimposed on congenital lesions, particularly the infected congenital hydronephroses. Concerning the latter, it is important to bear in mind that, despite comparatively little intact renal tissue, good visualization may often be encountered and that therefore intense roentgen shadows are no quantitative criterion nor one determining the type of therapeutic procedure. The latter will depend on the functional anatomic status of the individual case and the operative observations. In nonfunctioning hydronephrosis, the mere nonvisualization of a conducting system incidental to the functional anatomic derangement of the kidney parenchyma is in itself of great assistance as a means of localization and of diagnosis, when considered together with the other clinical data. In kidney reduplication, the visualization of one kidney pelvis stunted in its appearance and the failure to account for the other should suggest the presence of a double kidney and call for cystopyelographic investigation. The success of visualization in polycystic kidney disease will depend on the degree of renal decompensation. I do not mean to relegate retrograde pyelography to a minor role in the diagnosis of congenital anomalies. However, the less taxing and simpler method of excretion urography should be employed first, both for diagnosis and as a survey study. When corroborative or supplementary evidence is necessary, or when the results by

excretion urography are equivocal, retrograde pyelography may be resorted to, when the latter will be less time consuming and easier for the patient, some data on the status of the urinary tracts already having been acquired.

DR. LOUIS H. SEGAR, Indianapolis In Dr Campbell's discussion, from the pediatrician's standpoint I think that three things should be noted. We pediatricians have come to have a urologic point of view, we have come to realize that the baby who, having a chronic pyuria, does not respond in a reasonable length of time to medical treatment deserves a complete urologic examination. On the other hand, we are confronted with difficulties that consist in the selection of a complete urologist, because I believe that it is necessary in the conduct of such urologic cases in childhood to select a urologist who by training has perfected himself in the technic of the investigation of these patients. Not every urologist has acquired a competence that makes him a valuable assistant to the pediatrician in the conduct of these cases. I think that the urologist must acquire the pediatric point of view concerning things urologic in babies—in particular that what seems to be a dead kidney in a baby isn't always a dead kidney, that the regenerative and recuperative possibilities in the baby's anatomy are perhaps greater than those in the adult, and that what seems to be a surgical kidney in a baby is capable in some instances of sufficient regeneration and recuperation to make nephrectomy an unnecessarily radical procedure. The contribution of the ketogenic diet as a post-operative medical procedure is of decided value. After the surgical correction of some of these anomalies one is still confronted with the necessity of sterilizing the urinary tract, and the ketogenic diet is certainly a definite contribution toward that end. To institute a ketogenic diet for this particular purpose, one must institute a diet in which the ratio of fat to combined carbohydrate-protein is at least 4:1 and in some instances 5:1 and thereby obtain a beta-oxybutyric acid concentration of at least 0.5 per cent and a  $pH$  in the urine of somewhere around 5.5. When this is done, some of these very resistant urinary infections can at times be cleared up.

DR. REED M. NESBIT, Ann Arbor, Mich. I have seen a child who nine years ago was unable to void any urine. There was an enormous mass suprapubically. Catheterization of the bladder gave no urine, and suprapubic operation was done, at which time I found a kidney in the pelvis containing 1,500 cc. of fluid. Exploration of the upper part of the abdomen revealed no kidney on the opposite side. This was confirmed later by intravenous pyelography. He was kept on suprapubic nephrostomy drainage for a considerable period. A pyelogram was made by injecting the dye through the nephrostomy tube three and a half years after the operation on the kidney. The kidney had reduced very considerably. At the present time the boy is 17 years of age and I am now contemplating a fusion of the pelvis of the kidney with the bladder.

DR. C. H. DE T. SHIVERS, Atlantic City, N. J. I was interested in what Dr. Thomas has to say about the ectopic pelvic kidney. We have had two such cases in the last six years at the Atlantic City Hospital. One, a young man referred to the surgical service with the diagnosis of acute appendix, underwent an emergency operation by one of our general surgeons, who found on opening the peritoneal cavity that the appendix was normal but noticed that there was a retroperitoneal mass in the pelvis which, when exposed, was found to be a cystic kidney. Investigation was made to assure the surgeon of a grossly normal kidney on the opposite side before a nephrectomy was done. The other patient was a woman aged 32, referred to my service complaining of pain in the lower left part of the abdomen, which had persisted off and on since her first pregnancy. Previous examinations had been made by a gynecologist, who suspected that there might be some anomaly of the urinary tract. After a cystoscopic and roentgen study the right kidney was found in normal position with an infantile type of pelvis but showing a normal excretion of dye. On the left side the catheter could not be introduced beyond a point corresponding to the fourth lumbar vertebra. A retrograde pyelogram showed no injection in the left renal pelvis. The upper pole of the left kidney in the Trendelenburg position came to the lower border of the fourth lumbar vertebra. The dye output was deficient. Owing to the persistent symptoms

I decided to explore the kidney. An extraperitoneal approach was made and the kidney was found in the bony pelvis. The ureter was so short that I was unable to elevate the lower pole of the kidney above the crest of the ilium. Nephrectomy was decided on. The patient made an uneventful recovery and has been entirely relieved of all her symptoms. The pregnant uterus was probably a predisposing factor in producing the clinical symptoms by interfering with renal circulation and by trauma. The kidney on exposure was grossly normal. On section there was practically no extrarenal portion of the pelvis. Microscopic sections showed a diffuse, and in places a marked fibrosis, a well marked glomerular hyalinization, glomerular congestion and diffuse epithelial degeneration of the tubules.

DR. GEORGE R. LIVERMORE, Memphis, Tenn. I wish to confirm that fatal shock sometimes results when a large infected hydronephrosis is suddenly emptied. I had a case in a woman, aged 45, who had a large calculous pyonephrosis and perinephric abscess. Her nonprotein nitrogen and creatinine were high, she had rigors, fever and sweats and, although she was in very poor condition it was felt that drainage was imperative. When the abscess was incised, the pus escaped under great pressure and, although a piece of gauze was immediately pressed against the incision to prevent the too rapid evacuation of the pus, the patient went into shock and died within a few minutes despite all restorative measures. In regard to urologic procedures in children, we should all make an effort to educate the general practitioner and the pediatrician to the fact that congenital anomalies are of frequent occurrence and that children are subject to the same urologic conditions that affect the adult, with the exception of hypertrophy of the prostate and pyelonephritis of pregnancy, and hence should be given the benefit of a urologic study before their urinary tract is destroyed. Even young children stand urologic surgery better than adults. Recently a child, aged 1 year, was brought to me, who at the age of 2 months had been diagnosed as having pyelitis and had been treated with methenamine and a ketogenic diet. I found a large hydronephrosis due to a stricture at the ureteropelvic junction and an S-shaped kink at this point. The child was subjected to nephrectomy and behaved as though no operation had been done.

DR. JOHN K. ORMOND, Detroit. A patient came with all the symptoms of stone in the ureter. A plain roentgenogram showed what looked like two stones, one in the kidney and one in the ureter. Intravenous pyelography revealed both pelves filled up with some of the fluid. The ureters showed an ectopic kidney with a stone in each pelvis, that is, crossed ectopia with fusion. It was possible to remove the two stones through the same kidney incision.

DR. ROBERT GUTIERREZ, New York. From this symposium it is to be concluded that anomalies of the upper urinary tract in our modern urographic days are common and that every patient with the slightest urinary symptoms or the slightest complaint of abdominal discomfort or undetermined abdominal condition is entitled to a complete urologic and urographic examination before any surgical intervention is to be considered. I think that in many of these cases of anomalies of the upper urinary tract the intravenous urograms are not sufficient for a correct diagnosis and in many instances are confusing in the visualization or interpretation. As a rule, such kidneys are chronically inflamed or suffering from lack of function, chronic nephritis or chronic pyelitis and therefore eliminate the opaque substance poorly. It is my impression that many of these cases could be much more accurately diagnosed by the routine complete urologic examination with cystoscopy, catheterization of the ureters and bilateral pyelograms. The treatment or the surgical procedure to be instituted depends on the individual case. Many of these anomalies have practically no clinical symptoms, they may be considered silent. On the other hand, I have seen many cases of complete functionless hydronephrosis with hydro-ureter, also cases of ectopic and fused kidney in which operation for abdominal conditions has been performed without relief when in reality the underlying cause of the unsuspected condition was an established urologic lesion. So it is of vital importance that a correct preoperative diagnosis be made in order to determine the proper surgical treatment and assure an accurate prognosis. In horseshoe

# MYCOSIS FUNGOIDES—KLAUDER

## FEVER THERAPY OF MYCOSIS FUNGOIDES

JOSEPH V KLAUDER, M D  
PHILADELPHIA

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kidney disease the division of the isthmus of the kidney followed by nephropexy, nephrolysis and ureterolysis is the most appropriate treatment, even in cases without any associated pathologic changes visualized in an ordinary pyelogram but in which the patient has been suffering from the horseshoe kidney syndrome of abdominal pains, chronic constipation and intermittent urinary disturbances. In cases of renal ectopia, when the kidney is on the promontory of the sacrum in the middle line between the bladder and the rectum it is advisable to operate transperitoneally and do a nephrectomy instead of conservative procedure, provided the opposite kidney has enough function to stand the operation, if the ectopia is lateral, an extraperitoneal exposure is more advantageous.

DR. ALLEN B HAWTHORNE, Montreal. It is evident that congenital anomalies are being more easily recognized these days. With regard to Dr Herbst's remark about the heminephrectomy I am not opposed to heminephrectomy but am simply waiting for a case in which I think this procedure is suitable.

DR. GILBERT J THOMAS, Minneapolis. I was going to ask Dr Campbell to discuss two congenital conditions in children that have not yet been mentioned. Dr John Caulk recently has advised the resection of obstruction of the neck of the bladder in both male and female children for the control of residual urine. This is done for the improvement in function of the bladder and also, in some instances, for the relief of ureteral dilatation or backing up of urine through the ureter into the kidney pelvis. The other condition that I think should be mentioned is what I like to call atony of the ureter or congenital idiopathic dilatation of the ureteral wall with congenital defect in the development of the ureteral wall with no demonstrable obstruction either at the neck of the bladder or at the junction of the ureter with the bladder. It has been my experience that surgical intervention by attempting to dilate the ureter at the junction of the bladder or by plastic surgery at the ureteropelvic juncture has not been satisfactory. Congenital conditions in the urologic tract in children are now receiving the recognition that they should have, and, if we will listen to and cooperate with our pediatric friends and always be sure that we have the ability to examine these children and have the proper instruments for developing our technic we are going to find many congenital conditions that have been overlooked.

DR. MEREDITH F CAMPBELL, New York. Infravesical obstructions did not fall within the scope of my paper, therefore I said nothing about them. If the obstruction at the vesical outlet is relieved, essentially all has been done that is necessary to do unless subsequent investigation indicates that permanent secondary kinks have been established in the upper urinary tract and cause urinary retention. In the cases of vesical outlet obstruction that I have encountered—congenital valves of the posterior urethra, congenital contracture of the bladder neck, cord bladder of the spastic or atonic type—I have been content to relieve the obstruction at the vesical outlet as far as possible. In none of these cases have I attempted secondary operations on the upper urinary tract. As to the atonic ureter, I don't know how one can identify it as a lesion distinct from cord bladder. In the cases of atonic ureter the two conditions were part of the same process. Moreover in a great many cases of cord bladder the alterations in the upper urinary tract suggesting the diagnosis of atonic ureter, are purely back-pressure changes.

**The Fourth Ventricle**—The fourth ventricle is a midline cavity situated rostral to the cerebellum and caudal to the pons and dorsal portion of the medulla oblongata. It is connected dorsally with the third ventricle by means of the aqueduct of Sylvius, ventrally with the central canal of the medulla oblongata caudally and laterally with the cisterna magna by the foramina of Magendie and Luschka respectively.—Davidoff, L. M. and DYKE, C. G. The Demonstration of Normal Cerebral Structures by Means of Encephalography. V The Ventricles Interventricular Foramina and Aqueduct of Sylvius. *Bull Neurol Inst New York* 4 91 (March) 1935

Occasional cases of spontaneous regression of malignant tumors have been reported following attacks of acute infectious disease. In line with these observations, cases of mycosis fungoides, which disease in its later stage assumes the character of a malignant neoplasm, have been reported improved, indeed cured, following attacks of an acute febrile condition.

From published reports<sup>1</sup> of spontaneous regression of neoplasms it appears that such regression has occurred following incomplete surgical removal of the tumor, during acute febrile processes and following the application of heat, frequently in connection with some profound alteration in the metabolic processes of the organism, such as cachexia, artificial menopause or the puerperium. Of these circumstances, acute systemic infection is pertinent to this presentation. The majority of cases of spontaneous regression of neoplasms following an acute infection have occurred after an attack of erysipelas.<sup>2</sup> Such regressions have also occurred after smallpox, pneumonia, malaria and acute tuberculosis. In these cases a uniform symptom was a high fever sustained without remission for several days. In Rohdenburg's study<sup>1</sup> of conditions that can bring about regressive changes in malignant tumors, he ascribed heat as the most efficacious, applied from without or occurring under the limited conditions of long duration and comparatively low degree.

### INFLUENCE OF ACUTE INFECTIOUS DISEASE ON MYCOSIS FUNGOIDES

Bazin<sup>3</sup> in 1862 apparently was the first to report the favorable influence of an acute infection on mycosis fungoides. His patient was a man, aged 60, who presented a number of tumors of mycosis fungoides. During an attack of erysipelas the tumors began to decrease in size and disappeared in the course of eight days. Their ulcerative remains healed in the course of several months. Ten years later<sup>4</sup> the patient had had no recurrence of mycosis fungoides. The case reported by McVail, Murray and Atkinson<sup>5</sup> presented unusually large tumors of mycosis fungoides.

From the Philadelphia General Hospital. Department of Fever Therapy and Outpatient Department of Dermatology.  
Read before the Section on Dermatology and Syphilology at the Eighty Sixth Annual Session of the American Medical Association Atlantic City N. J. June 14, 1935.  
1 Tillmanns Hermann. Erysipelas in Billroth and Luecke. *Deutsche Chirurgie* part 5 Stuttgart F. Enke 1880. Weichel H. Zur Casuistik der Wirkung des Erysipels auf bösartige Geschwülste. *Inang Heilungs* Berlin G. Schade 1889. Mohr H. Ueber spontane Heilungen von Carzinom. *Therap. Monatsh.* 17: 553 and 617 1903.  
2 Rohdenburg G. L. Fluctuations in the Growth Energy of Malignant Tumors in Man with Especial Reference to Spontaneous Regression of Erysipelas. *Arch. f. klin. u. exp. Med.* 2 193 (April) 1918.  
3 Bazin P. A. E. Leçons théoriques et cliniques sur les affections cutanées artificielles. Paris A. Delahaye 1862.  
4 Bazin P. A. E. Mycosis Fungoides in Diction. in Encyclopédie des sciences médicales. Paris Masson & Cie 11, 192 1878.  
5 McVail C., Murray W. D., and Atkinson D. M. Case of Granuloma Fungoides. *Glasgow Hosp. Rep.* 1: 53 1898.

which greatly diminished within four days of the onset of an acute systemic infection. The temperature for eight days ranged from 100 to 105.6 F. For a few months following the infection the course of the disease was favorably influenced. There was a relapse, however, which caused death five months following the onset of the systemic infection.

Crocker<sup>6</sup> comments as follows on the favorable influence of systemic infection on mycosis fungoides: "Thus one of my patients was almost cured, and, of course, almost killed, by an attack of double pneumonia. Another improved very much during a malarial febrile attack, and erysipelas has quite cured one case."

Galloway and MacLeod<sup>7</sup> report the case of a woman in the erythematous stage of mycosis fungoides. During and subsequent to an attack of influenza "the progress of the disease seemed to be arrested, the

fungoides. Roentgen therapy was no longer effective. After erysipelas the lesions disappeared. The result is described as dramatic and surprising. The patient was observed by MacCormac for thirteen years after erysipelas, and except for a few lesions of mycosis fungoides the disease remained stationary and quiescent. MacCormac justifiably comments on the rarity of a patient surviving for seventeen years after the tumor stage of mycosis fungoides. The second patient was in the tumor stage of the disease, with ulceration of some of the tumors. Despite roentgen therapy the disease was progressing. Following an attack of erysipelas some of the tumors disappeared, others were flattened and no longer tumefied.

In contrast to the foregoing reports, it should be noted that Kaposi<sup>9</sup> reported a case of mycosis fungoides in which an attack of erysipelas failed to exert a beneficial effect on the disease. He mentioned a similar observation of Vidal. In Gray's<sup>10</sup> case of mycosis fungoides an attack of erysipelas appeared to aggravate the disease.

#### NONSPECIFIC PROTEIN THERAPY OF MYCOSIS FUNGOIDES

Injections with a variety of nonspecific proteins have been employed in the treatment of mycosis fungoides. Older reports concern the use of vaccines of *Streptococcus erysipelas* and erysipelas and prodigious toxins (Coley). Recent reports concern intravenous injections of a variety of vaccines to produce fever and constitutional reaction constituting nonspecific protein therapy.

Fordyce<sup>11</sup> treated a patient with intravenous injections of typhoid and paratyphoid vaccines. There was complete relief from itching, with disappearance of some of the lesions. However, the patient died of mycosis fungoides about one year after treatment.<sup>12</sup> Wills and Hadfield<sup>13</sup> employed *Bacillus coli* vaccines. After the fifth injection the lesions disappeared, the patient remaining free from the eruption for one year, at which time there was a relapse. Cannon<sup>14</sup> as well as MacCormac<sup>15</sup> employed nonspecific protein therapy in a number of cases of mycosis fungoides. Their results with this treatment were not satisfactory.

#### MALARIAL AND FEVER THERAPY OF FUNGOIDES

Motivated by the favorable influence of an acute infectious disease on mycosis fungoides, I employed malaria in the treatment of a patient with mycosis fungoides (case 1) and produced fever in another patient by means of the Kettering hypertherm (case 2). Subsequent to the employment of these methods of treatment I have been informed by O'Leary<sup>16</sup> of the Mayo Clinic and by MacCormac of London of their use of inoculation malaria in the treatment of mycosis fungoides. O'Leary treated two patients. One was in the tumor stage of the disease. After treatment all the lesions disappeared except one tumor, which was excised. The patient remained free from the disease for one year, at which time he died suddenly of an unknown cause.



Fig 1 (case 1)—Mycosis fungoides. Appearance four months before malarial therapy. There was a generalized eruption of erythematous scaly areas infiltrated plaques and elevated lesions assuming tumor size.

pruritus diminished, the scaliness disappeared, and the erythrodermia became less vivid." Three months after influenza the disease relapsed, at which time a total of ten injections of Coley's serum was administered. These injections caused a retrogression of some of the lesions. The final outcome is not reported.

MacCormac<sup>8</sup> reports two cases of mycosis fungoides illustrating the beneficial effect of an attack of erysipelas. One patient is reported alive at the age of 59, seventeen years after mycosis fungoides appeared in the tumor stage and twelve years after an attack of erysipelas. Before erysipelas the patient was gravely ill, it appeared that she would soon die of mycosis

6 Crocker H R. Diseases of the Skin. Philadelphia: Blakiston's Son & Co. 1903. p 1055.

7 Galloway J., and MacLeod J M H. Mycosis Fungoides. An Examination of Three Cases. *Brit J Dermat.* 12: 153. 1900.

8 MacCormac H. Erysipelas and Mycosis Fungoides. *Brit. J Dermat. & Syph.* 45: 237 (June) 1933.

9 Kaposi M. Mycosis fungoides und ihre Beziehungen zu anderen ähnlichen Erkrankungsformen. *Wien med Wchnschr.* 37: 596 and 723. 1887.

10 Gray A. M. H. Case Presentation. Royal Society of Medicine, Section on Dermatology. *Brit J Dermat.* 46: 498 (Dec.) 1934.

11 Fordyce John cited in discussion on case presented by Dr Zeisler. Chicago Dermatological Society. *J Cutan Dis.* 37: 263. 1919.

12 Cannon A. B. former associate of the late Dr John Fordyce. Personal communication to the author.

13 Wills W K. and Hadfield G. Mycosis Fungoides. *Brit. J Dermat.* 37: 113 (March) 1925.

14 MacCormac H. Personal communication to the author.

15 O'Leary Paul. Personal communication to the author.

# MYCOSIS FUNGOIDES—KLAUDER

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In the other case, after malarial treatment the elevated plaques flattened. Improvement was estimated to be about 50 per cent. This patient died of pneumonia about one year after malarial treatment. O'Leary treated three other patients with fever produced mechanically. It was without effect.

MacCormac<sup>16</sup> employed inoculation malaria in the treatment of a patient in the tumor stage of mycosis

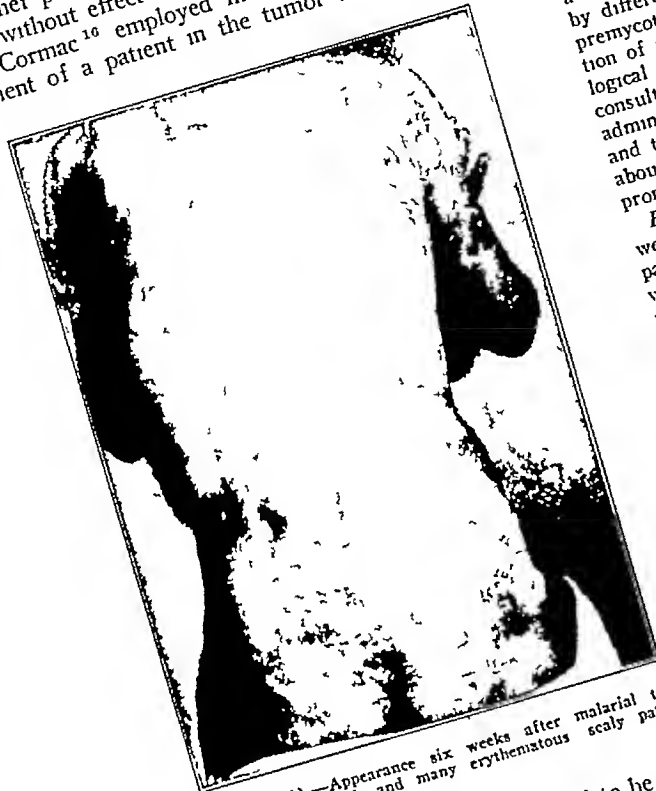


Fig. 2 (case 1)—Appearance six weeks after malarial treatment. Elevated lesions flattened and many erythematous scaly patches disappeared.

fungoides after roentgen therapy ceased to be effective. Following malarial treatment the tumors rapidly flattened and almost entirely disappeared. About one year following this report MacCormac wrote me<sup>17</sup> as follows:

Gradually lesions reappeared and although the patient's condition is much better than before the malaria treatment, it has been necessary to x-ray a number of areas at intervals. I saw him on April 3 at Middlesex Hospital and found him generally in good condition except for an infiltrated eczematoid eruption on the legs of a mycotic nature. For some reason, or by some chance, I have had more than my share of patients with mycosis fungoides and in view of past experience with this disease I feel justified in saying that without the malaria treatment this man would by now be dead. We are now able to carry on his occupation (although not to his full working capacity) which was impossible before malaria therapy was instituted. About four months ago I treated with malaria another patient with a large number of small button sized tumors and areas of pre-fungoides in addition to one large tumor and almost entirely disappeared. During the period of pyrexia the tumors and mycotic lesions flattened down and improvement began. He has, however, not maintained the improvement. The tumor soon after the malaria pyrexia was stopped began to develop to their former size and it has been necessary to irradiate with x rays some of the larger masses which have

<sup>16</sup> MacCormac H. Mycosis Fungoides Treated by Malaria. Presentation, Royal Society of Medicine, Section on Dermatology, 1934.  
<sup>17</sup> MacCormac H. Personal communication to the author in April 1934.

developed. This second case has, therefore, not been successful, it was nevertheless encouraging, so far as it went, to see that this type of therapy has an effect, and a profound effect, on the disease within limits.

## REPORT OF CASES

**CASE 1—Mycosis fungoides treated with malaria.** History—J. H., an American, aged 56 in August 1932 presented a typical picture of mycosis fungoides. Itching first appeared in 1926 about the time of the onset of erythematous scaly areas on the trunk. The eruption was regarded as eczema for which a variety of local applications were prescribed without avail by different physicians. In 1928 a tentative diagnosis of the premycotic stage of mycosis fungoides was made at a presentation of the patient at a meeting of the Philadelphia Dermatological Society. In 1930 a dermatologist whom the patient consulted diagnosed mycosis fungoides. Roentgen therapy was administered at intervals for six months. Itching was relieved and the eruption improved. Improvement was maintained for about one year. At the end of this period itching became more pronounced and many new lesions appeared.

**Examination—**Scattered over the entire cutaneous surface were variable sized, sharply margined, brick red, scaly patches, some were infiltrated and a few were elevated. There was considerable itching. The patient was well developed and nourished. The epitrochlear and axillary lymph nodes were moderately enlarged. The liver and spleen were not palpable. The heart and lungs were normal. Complete blood count and smear showed no unusual features.

**Course and Treatment—**Solution of potassium arsenite was administered and roentgen therapy—one-half skin unit—was

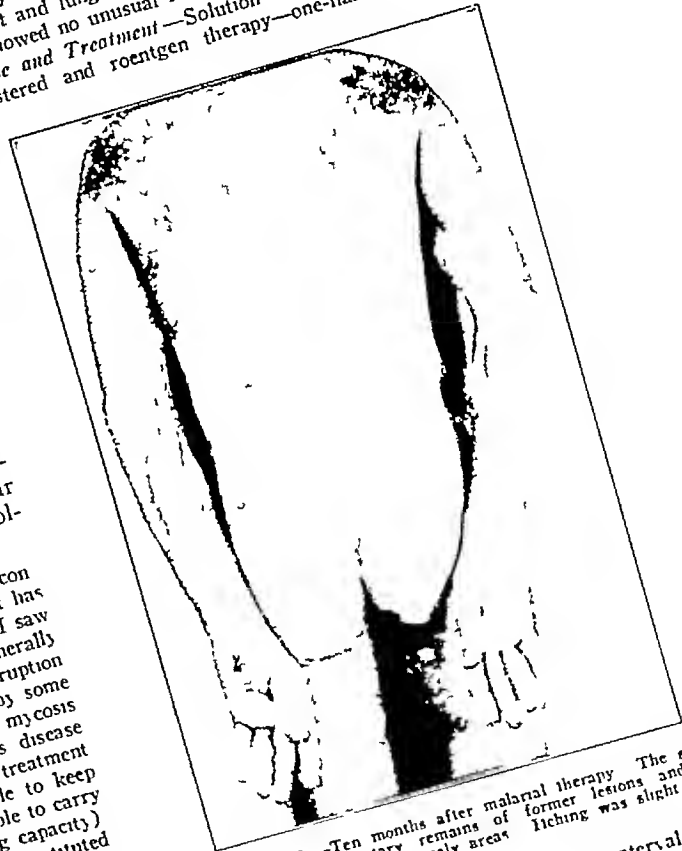


Fig. 3 (case 1)—Ten months after malarial therapy. The skin was clear except for pigmentary remains of former lesions and a few scattered small erythematous scaly areas. Itching was slight.

applied to the most pronounced lesions at intervals of two weeks. The lesions were treated at different times. The disease improved under this therapy until about September 1933, at which time improvement was not maintained. New lesions appeared and older lesions became more pronounced. Roentgen therapy became much less effective. In October 1933 antigen H (typhoid) fifty million to one billion organisms was injected intravenously every other day for six consecutive injections.



There was a constitutional reaction with fever rise of from 102 to 103 F. No clinical improvement resulted. The patient consented to malaria inoculation. Physical and laboratory examinations disclosed no contraindication to such inoculation. At this time itching was severe and the patient was partly incapacitated. Lesions of the disease involved the scalp, eyebrows, eyelids, face, neck, trunk, perineum and extremities. Such lesions consisted of erythematous, scaly areas and many infiltrated and raised plaques. Some lesions were considerably elevated, assuming tumor size. None were ulcerating. The clinical picture was more pronounced than that shown in figure 1, which shows the eruption in July 1933.

On November 11 6 cc of blood from a patient with tertian malaria was injected intravenously. The initial febrile reaction occurred November 21 and thereafter every other day. The temperature range was from 103 to 105.6 F. Plasmodia were demonstrated in blood smears. After ten consecutive febrile reactions, quinine was administered. There were no untoward reactions and convalescence was uneventful.



Fig 4 (case 1)—Patient seventeen months after malaria therapy. The improvement was maintained. There were about twelve flat, scaly lesions. Itching was still present but was not disturbing.

During malaria therapy, improvement of the mycosis fungoides was apparent. Itching was less and elevated lesions became flatter. Subsequent improvement was gradual and is pictorially shown in figures 2, 3 and 4. About six weeks after the termination of malaria all elevated lesions were flat and many scaly lesions had disappeared, itching was less (fig 2) and roentgen therapy and the administration of solution of potassium arsenite were resumed. About six months after malaria improvement was considerable the skin was clear excepting for about one dozen dry, scaly areas and the pigmented remains of former lesions (similar to the condition shown in figure 3). Therapy with roentgen rays and the administration of solution of potassium arsenite was continued. Itching was slight. The patient was in good condition and was working.

In May 1935 the improvement in the patient's condition was generally maintained, excepting for the appearance of a few new flat scaly lesions (fig 4). Itching was still present but did not disturb sleep. The patient was in good general condition and working steadily.

**CASE 2—Mycosis fungoides treated with fever therapy.** History—F S, a man, aged 53, American, complained of itching confined to the trunk, which was the initial symptom and was soon followed by what he described as a "red, scaly eruption." The onset had occurred two years prior to December 1933 when I saw him. The eruption gradually became generalized. Itching was considerable and continued unabated. He had been hospitalized in the dermatologic wards of two different hospitals. Infected teeth had been removed and gallbladder drainage carried out. A vaccine prepared from secretion obtained by prostatic massage had been administered. He had received what was from his description spinal anesthesia. Sixteen such treatments were given for the relief of itching. This caused temporary cessation of the itching. A variety of local treatments had been employed. Improvement of the eruption and of the itching were only temporary.

**Examination**—The patient presented a generalized eruption of erythematous, scaly areas, eczematoid in nature. The involvement was confluent on the extremities, presenting an appearance of erythroderma. On the trunk were scattered papules, which were discrete and definitely infiltrated. Itching was severe and incapacitated the patient. He was in good general condition, physical examination and laboratory tests, which need not be detailed, showed nothing unusual.

A section of an infiltrated papule disclosed slight hyperkeratosis and acanthosis associated with edema. There was a perivascular infiltration and angioblastic proliferation with some fibroblasts. The appearance suggested a low grade inflammatory reaction. In the upper third of the corium there was a sharply limited cellular infiltration of lymphocytes and a variety of other cells varying in size, shape and staining characteristics. In the epidermis there were the so-called epidermal abscesses of Pautrier.

Dr Fred Weidman of Philadelphia regarded the section as representative of the early stage of mycosis fungoides.

**Course and Treatment**—Local applications appropriate for eczema and roentgen therapy were employed. Following this treatment there was considerable improvement both in the skin condition and in the itching. After a few weeks, however, there was a relapse. In view of the severity of the itching, the persistence of the eruption in spite of treatment, its prompt relapse, the infiltrated papules and the histologic picture, the diagnosis of early mycosis fungoides was justified.

Fever was produced by means of the air-conditioned fever chamber known as the Kettering hypertherm. Treatment started in February 1935 was repeated once and twice weekly for twelve consecutive times. The temperature range was from 104 to 105 F. At each treatment the temperature was elevated for from four to five hours.

After a few treatments the eruption became less pronounced and the itching subsided. The improvement was progressive, so that toward the end of treatment the skin was clear except for areas of pigmentation and areas of excoriations. Itching considerably lessened. Three months after fever therapy there were about six slightly red, dry, excoriated areas. Itching was slight and did not disturb sleep. The patient resumed work and was in good general condition.

#### COMMENT

From the foregoing data it appears that an acute infection favorably influences the course of mycosis fungoides. Of five cases of this disease treated with inoculation malaria, here reviewed, the results were favorable in four. Malarial therapy apparently does not cure mycosis fungoides, it produces, however, a distinct effect on the disease, an effect greater than treatment ordinarily employed, such as arsenic and roentgen therapy. The future therapy of the disease may be the employment of all these methods. Observations are too incomplete to evaluate the therapeutic efficacy of fever produced by electrical methods. From evidence herein presented it appears that fever caused by an infection is superior. If the electrical method of producing fever is employed it would seem more desirable to combine such therapy with the injections of nonspecific proteins.

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Reference is made to the stimulation of the reticulo-endothelial system by injections of antigenic substances and the role that such a system plays in the defensive mechanism of the body. The concomitant injections of antigenic substances with fever therapy are in accordance with the hypothesis of Jacobsen<sup>18</sup> that the reticulo-endothelial system, when sufficiently active (as when stimulated by one or a number of acute infectious processes), may attain in a measure the ability to cope with neoplastic diseases in a similar if not an identical manner.<sup>19</sup>

The progress of the patient treated with malaria a

NOTE.—The progress of the patient treated with malaria at the time (December 1935) this report goes to press is as follows. In July 1935 new lesions of mycosis fungoides appeared. Fever therapy by means of the Kettering hyperthermia was administered. Twelve consecutive treatments were given two and three times weekly, the temperature range was from 104 to 105 F. Fever therapy is now being administered at weekly intervals. The improvement was not as pronounced as that occurring after malaria therapy. The patient now has many flat erythematous, scaly lesions. The appearance is comparable to that shown in figure 2. His general health is good. He is doing laborious work daily.

## ABSTRACT OF DISCUSSION

ing laborious work  
1934 Spruce Street.

ABSTRACT OF DISCUSSION

DR. W. R. JAFFREY, Hamilton, Ont. The therapeutic effect of radiation on mycosis fungoides has always made me think of new growth as the causal factor, although the pathologic picture impressed me as infective. The pathologic picture shown to many pathologists in these cases varies. In a case that I had some years ago I never could get from a pathologist a diagnosis of the mycosis fungoides and the man died of it. Our knowledge of fever therapy in syphilis shows that it combats an infective process. The effect of erysipelas on mycosis fungoides has been reported frequently enough to prove that the fever process acts against an infective disease. The effect of fever on the pathologic picture present in psoriasis further strengthens the infective origin of psoriasis. I have had occasion to treat a case of dementia paralytica presenting of pneumonia and his lesions had not recurred at that time. I should like to have Dr. Klauder make some remarks in connection with this. As to the raising of the body temperature by biologic or by physical means, much depends on the patient. In my experience with malaria it has been demonstrated that in the treatment of neurosyphilis it can be considered a moderately safe procedure. I cannot but feel that in the malaria therapy of syphilis there is some factor of a biologic nature aside from the fever. Mycosis fungoides is such a serious disease that there is justification for risking malaria therapy. From experience I would not feel like subjecting a patient to erysipelas. I hope Dr. Klauder and his associates will report on this therapy later although the rarity of the disease precludes any massive investigation. At least all can investigate malaria or physical means as opportunity presents itself and final conclusions will have to be based on an accumulation of clinical reports. From my experience with the complication of erysipelas with mycosis fungoides the length of the remission of the disease must be of extensive duration like McCormac's report on erysipelas before one can be at all confident but I feel that Dr. Khuder is suggesting a therapy which we are all justified in trying when we have a case that is going to give us much trouble.

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Der chronische Reiz des reticulo-endotheliale Arch f Dermat u Syph. 169 56  
editorial J. A. M.

IDES—KLAUDER

DR PAUL A O'LEARY, Rochester, Minn. In 1927 I inoculated a patient who had mycosis fungoides with *Plasmodium vivax* and allowed him to have twelve fever bouts. At the time of inoculation he had almost twelve lesions all the lesions except stage. Within a period of eleven months all the lesions except one had disappeared. The patient, however, died at this time, of a ruptured esophageal varix. The following year I inoculated a woman who had mycosis fungoides of seven years duration. She was in the early fungating stage at the time, and although her response was less startling than that of the previous patient, there was evident and definite improvement. She died of pneumonia some nine months after the opportunity to inoculation. Time went along until I had the opportunity to use the Kettering-Simpson hypertherm, and three patients have been treated by this method. One was a middle-aged man who had had the disease for five or six years but who, following the second treatment, developed a very extensive and severe herpes zoster, which necessitated discontinuing the treatment. The other two patients were women, in both of whom the disease had been of long duration. They had received roentgen therapy for many years. In these two women there has been evidence of improvement in the sense that new lesions have not appeared, although the old ones are slow in disappearing. The pruritus has left and they feel better generally. I believe that the therapeutic effect from malaria therapy as well as from hyperthermy will be long in appearing. Perhaps from eighteen to twenty-four months of observation will be necessary before appraisal of the results will be possible. Recently I have augmented the fever therapy in these patients by the use of a chaulmoogra oil derivative, as suggested by Lomholt. The combination of fever and chaulmoogra oil therapy must likewise be watched for several years before any deductions can be made as to its value.

F. F. CORSON, Philadelphia. When one is confronted with such a condition as mycosis fungoides, the usual treatment can be placed on the usual treatment, but it is not possible to strike out.

Dr E F Corson, Philadelphia When one is confronted with the treatment of such a condition as mycosis fungoides, especially when no more reliance can be placed on the usually recommended forms of therapy, it is justifiable to strike out rather boldly in search of new methods. In the present instance one should not lose sight of the fact that temporary improvement has often been noted to follow nonspecific protein therapy in intercurrent infections and the like in this and others of the lymphoblastomas. At Dr Klauder's suggestion I treated a private patient with fever therapy, employing a cabinet in which the body temperature is raised by means of a spray of hot water. This patient was in the tumor stage, with many marble to goose-egg sized fungoid excrescences, numerous infiltrated plaques and much interspersed eczematoid outbreak. Following four consecutive daily treatments in which the body temperature was brought to 104.3 F and then lowered to normal in ten hours, the patient's skin showed marked improvement. Exfoliation of the entire surface ensued in the week following this procedure and the eczematoid rash and nearly all infiltrated plaques disappeared. All the tumors flattened down and several ulcers healed. Four months after the treatment the patient has held most of her gain and is much more comfortable but is by no means rid of her disease. While the number of cases in which this method has been employed is so small that it does not as yet carry sufficient weight to be convincing nevertheless it would appear to show at least temporary relief.

GUY LANE Boston I will mention a case that comes to mind. A man had a definite mycosis fungoides, gradually increasing for four years ago.

Dr. C. GUY LANE Boston I will mention a case that comes in this group. A young man had a definite mycosis fungoides beginning shortly after the war gradually increasing controlled somewhat by roentgen therapy and about four years ago becoming very nearly absolutely generalized, at which time I thought that there probably would be a fatal outcome within a comparatively short time. He had a few slight infections at that time and just shortly after I saw him he developed pneumonia followed by a septic arm, which was later opened, a pure streptococcic infection being found and subsequent to this and coincident with vaccine injection he gradually got better I saw him six weeks later and much to my surprise the infection was fully 60 or 75 per cent pigmented. He had no fungating lesions but simply brownish pigmented red areas at the site of some of his former involvements. He had a period of some year and a half of almost absolute quiescence and then gradually lesions developed that were not controlled by roentgen

18 Jacobsen Charles Der chronische Reiz des reticulo-endothelialen  
Systems—eine Krebsstimmung Arch f Dermat u Syph. 169 562  
(Feb.) 1933  
19 Erysipelas and Prodigious Toxins (Coley) editorial J. A. M. A.  
103 10.0 (Oct 6) 1934

treatment. Attempts were made to duplicate, if possible the previous condition when he had fever for about three weeks. Some of the previous vaccine was obtained. Attempts were made to produce fever by means of injections of sulfur, Coley's serum and typhoid vaccine, and, in addition he was given fever treatment by means of the hypertherm, but without any relief. The disease progressed gradually and the patient died with a very marked generalized swelling, a type of termination which I have seen in only one other case.

DR. JOSEPH V. KLAUDER, Philadelphia. It is helpful at times to review old literature. The use of heat and fever employed in a limited way by the older clinicians is being revived and these are now employed in a more elaborate way. Weichel, for example, writing forty-five years ago, stated that bacterial therapy of malignant disease promises to be a successful means in the future. Of course the use of the methods that I have discussed in the treatment of mycosis fungoides is experimental. It will take years of observation to determine their value. It seems to me that the data which I have reviewed justifies the use of malarial inoculation in the treatment of mycosis fungoides. I have had little experience with fever therapy of psoriasis. The few cases that were treated in the fever therapy department of the Philadelphia General Hospital were temporarily improved. The disease soon relapsed.

## Clinical Notes, Suggestions and New Instruments

### POLYCYSTIC KIDNEYS WITH BILATERAL PERINEPHRIC ABSCESES. BILATERAL OPERATION. REPORT OF CASE

FRANCIS PATTON TWINEM, M.D., NEW YORK

Patients having polycystic kidneys are not usually subjected to surgical treatment, but there are certain conditions that may arise making resort to surgery advisable.

In some cases in which there is considerable pain the Rovsing operation is indicated, puncturing or dissecting out some of the cysts that are causing pain due to the tension of the contained fluid. Other cases in which operative procedure may properly be employed are those of continued and dangerous hemorrhage and those complicated by calculus formation, renal abscess, new growth or tuberculosis.

Instances of perinephric abscess complicating polycystic renal disease are not frequent. When this condition does arise, it usually has its origin in an infected cyst. Bilateral perinephric abscess complicating polycystic disease is exceedingly rare. I have not found a case reported in the recent medical literature. Such a one is herewith reported.

J. N., a man, aged 37, a fireman, entered the Brady Foundation of the Department of Urology of the New York Hospital, March 29, 1935, complaining of pain in the left side.

The patient's father died of kidney disease (? polycystic) at 44. One brother had recently died a day and a half after nephrectomy for an infected, painful kidney. Inquiry in regard to this case revealed that the removed kidney was polycystic. Pyelographic investigation of another brother, aged 41, had recently revealed the presence of polycystic kidneys.

The patient's previous health had been good. There had been no previous operations except for correction of a nasal fracture. There was a history of gonorrhea in 1929.

Six weeks before admission he was struck in the left flank by a stream of water from a fire hose, following which he noticed pain in the left kidney region, some frequency dysuria and slight hematuria. This condition lasted about two weeks and then quieted down but recurred four days before the patient was admitted.

Laboratory examination of the urine on admission showed an amber color, an acid reaction, a heavy trace of albumin, 10 red blood cells per high power field, 50 white blood cells

per high power field, and many bacteria. Urine culture yielded *Bacillus lactis-aerogenes*. Blood examination revealed red blood cells, 4,360,000, white blood cells, 17,000, hemoglobin, 80 per cent. The Wassermann reaction was negative. Blood urea nitrogen was 10 mg. The three hour phenolsulfonphthalein excretion was 78 per cent. The temperature on admission was 98.8 F.

Bilateral pyelography at this time (fig. 1) showed a double kidney suggestive of polycystic disease in the left pyelogram.

#### Analysis of Specimens Obtained by Ureteral Catheterization

|   | Right            | Left                     |
|---|------------------|--------------------------|
| Urea  | 28 Gm. per liter | 14 Gm. per liter         |
| Phenolsulfonphthalein (in<br>travenous) appeared in | 6 minutes        | 7½ minutes               |
| Phenolsulfonphthalein in 10<br>minutes              | 12 per cent      | 1 per cent               |
| White blood cells                                   | 0                | 100 per high power field |

The psoas margin on the left side was obscured and a diagnosis of polycystic disease or tumor with perinephric abscess was made.

Cystoscopic examination at this time showed a moderate cystitis. Specimens obtained by ureteral catheterization are analyzed in the accompanying table.

The patient on admission was well developed and well nourished. The blood pressure was 148 systolic, 78 diastolic. There was considerable tenderness in the left upper quadrant and at the left costovertebral angle. Five centimeters below the left costal margin was felt the edge of a tender mass which did not move on inspiration.

April 5, under spinal anesthesia, the left loin was explored. The perinephric tissues were very edematous. These tissues were opened as far posteriorly as possible, releasing about 8 ounces of pus. The kidney was found to be very large, with



Fig. 1.—Bilateral pyelograms taken on admission. Note very large, double left kidney with obscuration of the psoas margin. Left perinephric abscess and polycystic kidney found at operation.

many cysts on its surface. Four rubber tissue drains were inserted. A culture taken from the wound at this time showed *B. lactis aerogenes*.

After the operation there was some infection of the wound for several weeks. June 6 the patient had an attack of pain in the right lower quadrant with a temperature of 102.4 F. An indwelling catheter was inserted into the right renal pelvis on

# ULCER—KUNSTADTER AND GETTELMAN

## GASTRIC ULCER WITH FATAL HEMORRHAGE IN THE NEW BORN

RALPH H. KUNSTADTER, M.D. AND EUGENE GETTELMAN, M.D.  
CHICAGO

Death in the neonatal period due to acute gastric hemorrhage complicating gastric ulcer is of rare occurrence and warrants the report of any new cases.

A brief review of the literature discloses that Theile<sup>1</sup> in his study of the entire problem of ulcer in children lists sixty-four reported cases of ulceration of the gastroduodenal mucosa occurring during the neonatal period. These he classified as ulcerations associated with melena neonatorum. Berglund<sup>2</sup> found fourteen duodenal ulcers, four gastric ulcers and one combined duodenal and gastric ulcer in 1,323 postmortem examinations of children up to 13 years of age. In fifty-six cases of his patients were in the first year of life. In a recent communication, Dunham and Shelton<sup>3</sup> reported a case of multiple gastric ulcers in a new-born infant. In a review of the literature they were impressed by the rarity of this condition. Recently Mills<sup>4</sup> reported a case of gastric ulcer with hemorrhage in an infant 6 days old. This infant first presented gastro-intestinal symptoms on the fourth day of life. Vomitus and stools were first noticed on the last day of life. Autopsy revealed multiple gastric ulcers. Streptococci were found in the tissue about the ulcers and in the sloughing debris. In 7,044 autopsies at Michael Reese Hospital during the past twenty years only seven cases of gastroduodenal ulcerations have been found in infants under 1 year of age, and of these infants only two were younger than 1 month.

### REPORT OF CASES

**CASE 1—History**—A white premature male infant weighing 2,145 Gm was born spontaneously after a normal labor at 9 p m, Oct. 30, 1934. The infant was transferred immediately to the premature infant service, Dr. Mark Jampolis attending. The infant appeared to be in good physical condition at birth.

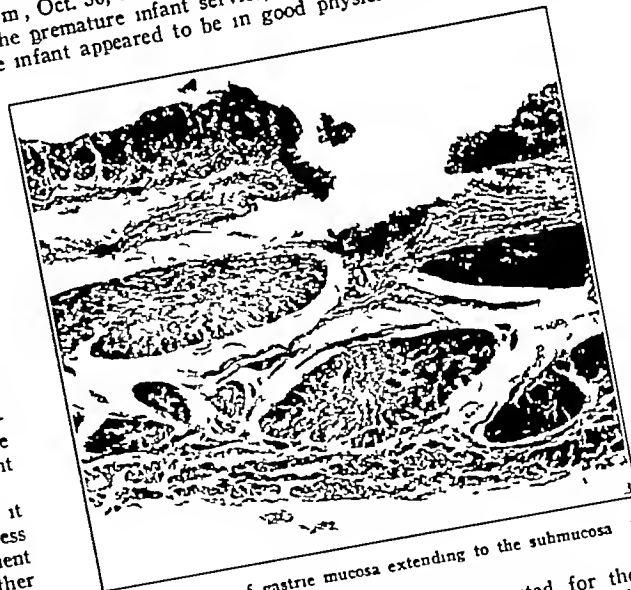


Fig 1—Ulceration of gastric mucosa extending to the submucosa  $\times 50$

and made satisfactory progress until it vomited for the first time at 2 p m, October 31. The vomitus was dark brown, coffee ground in appearance. At 8 p m, a small amount of

From the Sarah Morris Hospital for Children and the Department of Pathology, Michael Reese Hospital.  
1 Theile, Paul, Ueber Geschwulstbildungen der gastroduodenalen Tractus im Kindesalter, Ergebn. d. inn. Med. u. Kinderh. 16: 301, 1919.  
2 Berglund, Nils, Zur Kenntnis des Magens und duodenalen Geschwures bei Kindern, Acta paediat. 8: 323, 1928, 1929.  
3 Dunham, Ethel C., and Shelton, M. T., Multiple Ulcers of the Stomach in a New Born Infant with Staphylococcus Septicemia, J. Pediat. 4: 39 (Jan.), 1934.  
4 Mills, S. D., Gastric Ulcer with Hemorrhage in Infants Aged Less Than One Month, Am. J. Dis. Child. 48: 108 (July), 1934.

Fig 2—Intravenous urogram taken just before the second operation. Note the impression of a large mass on the right side with obliteration of the psoas margin. Right perinephric abscess and polycystic kidney found at operation.

become very large and tender. A diagnosis of perinephric abscess on the right side was made and operation for drainage of this abscess was performed on August 25. At this operation about 10 ounces of pus was evacuated, and the kidney surface showed numerous cysts. Several cigaret drains were inserted. Following the second operation, the patient was markedly improved but continued for several weeks to have an irregular fever, varying between normal and 103 F. However, he was fairly comfortable nearly all this time. September 11 he was given a blood transfusion. September 15 the temperature dropped to about normal and remained normal until his discharge, September 22, at which time his condition was quite good although there was still a little drainage from the right lumbar incision.

This case has been considered worth reporting in that it exhibits the rare condition of bilateral perinephric abscess complicating polycystic kidneys. Two brothers of the patient have had definitely proved polycystic disease and the father died of probable polycystic renal disease.

The congenital nature of this disease is well recognized and has been emphasized particularly by Crawford<sup>1</sup>. It has not been considered necessary to go into the embryology, pathology, symptomatology and diagnosis of polycystic disease, as these have been well covered by several authors particularly Braasch and Schacht<sup>2</sup>. The surgical aspects of polycystic disease with the citation of eighty-five surgical cases have been well covered by Walters and Braasch<sup>3</sup>.

97- Park Avenue.

1 Crawford, R. H., Surg. Gynec. & Obst. 36: 185-188 (Feb.), 1923.  
2 Braasch, W. F., and Schacht, F. W., Tr. Am. A. Genito-Urin. Surgeons 25: 71, 1912.  
3 Walters, W. F., and Braasch, W. F., Surg. Gynec. & Obst. 58: 647-650 (March), 1934.

June 7. A blood transfusion was given on June 12. A blood culture, taken June 10, was sterile. At this time he had an irregular fever and a large tender mass was developing on the right side. July 13, urine obtained from the right kidney by catheterization showed more than 100 white cells per high power field, with numerous clumps and many bacteria. August 23, an intravenous pyelography was done (fig 2). This revealed a large mass in the right side, with almost total obscuration of the psoas margin. The white blood cell count was elevated at this time and the mass in the right flank had



dark red blood was vomited. At 9 o'clock a massive amount (approximately 3 ounces) of dark red blood with clots gushed from the mouth and the infant became cyanotic. Thirty cubic centimeters of whole blood was given intramuscularly and 20 cc. of physiologic solution of sodium chloride subcutaneously. At 11:45 considerable fresh blood was again vomited, following which 4 cc. of a thromboplastic substance was given intramuscularly. During the next twelve hours hematemesis continued at frequent intervals in spite of injections of whole blood and the thromboplastic substance intramuscularly. The



Fig. 2—Section shown in figure 1 viewed under higher power (slightly reduced from a photomicrograph with a magnification of 150 diameters)

infant appeared apathetic, with pallor and cyanosis around the mouth and nose. During the next twenty-four hours bleeding continued, muscular twitches were frequent, pallor was pronounced and the skin had become hard and cold. Fifty cubic centimeters of blood was given intravenously in an ankle vein at 7 p. m., November 1. During the next twenty-four hours the temperature fluctuated between 103 and 105 F. Induration of the skin and subcutaneous tissue had become pronounced. Death occurred at 6 p. m. November 2, forty-five hours after birth. Although hematemesis was frequent, melena was absent at all times. Meconium was passed on two occasions on the second day. The antemortem diagnosis was gastric ulcer or ruptured esophageal varices.

**Autopsy**—The essential pathologic changes are confined to the heart and gastro-intestinal tract.

Macroscopic examination showed the heart to be of average size. There were several small areas of subepicardial hemorrhage. There were no retractions or adhesions of the valves. The myocardium was firm and reddish brown. The ductus arteriosus and foramen ovale were patent. The great vessels presented no gross abnormalities.

The stomach and first portion of the duodenum were greatly distended. Distal to this, the duodenum was flattened. Opening of the stomach and duodenum revealed that there was a complete atresia of the duodenum just proximal to the ampulla of Vater. The stomach and dilated portion of the duodenum contained about 2 ounces (60 cc.) of clotted blood. There was not even a suggestion of a lumen to establish continuity between the first and second portions of the duodenum. The mucosa along the greater curvature of the stomach was studded with many pin-head ulcerations. The latter extended through the mucosa. They were surrounded by a rim of grayish necrotic-looking tissue. The mucosa of the stomach was hemorrhagic. The mucosal surface of the portion of the duodenum proximal to the atresia was covered by a layer of thick mucus. The remainder of the bowel presented no gross abnormalities. The mesenteric lymph nodes were not enlarged.

Microscopic examination of the heart showed no changes except for moderate vacuolation of the muscle fibers.

One section of the stomach showed an ulcer, which extended through the mucosa to the submucosa. The base of the ulcer was composed of necrotic tissue, in which were scattered a few red blood cells (figs. 1 and 2). The margins of the ulcer were formed of necrotic tissue.

**CASE 2—History**—A white male infant weighing 2,875 Gm. was delivered spontaneously at 6:45 a. m., Aug. 30, 1935, after an eight hour labor. At 4:15 a. m. morphine sulfate  $\frac{1}{8}$  gram (0.01 Gm.) and scopolamine hydrobromide  $\frac{1}{150}$  grain (0.0004 Gm.) were given hypodermically. At birth the infant was narcotized, and resuscitation was accomplished with some difficulty by tracheal catheterization and external stimulation.

The mother's obstetric history was irrelevant, as she was in excellent health throughout her pregnancy.

The baby was offered 5 per cent dextrose solution at frequent intervals during the first twenty-four hours and was placed on the breast at the beginning of the second day. At 7 p. m., August 31 (36 hours old) the infant vomited approximately 1 ounce (30 cc.) of fresh blood, some of which was clotted, and passed a small amount of dark clotted blood from the rectum. At 8 p. m., 15 cc. of the mother's blood was given intramuscularly. At 8:30 it again vomited a large amount of bright red blood. When first seen by one of us (R. H. K.) at 9 o'clock the baby appeared somewhat listless. The crib linen adjacent to the head was soaked with fresh blood. The face was covered and the pharynx was filled with blood. The anterior fontanel was moderately depressed. The heart was rapid, the pulse was feeble and the lungs were normal to physical examination. The abdomen was moderately distended. The liver was palpated one fingerbreadth below the right costal margin. No intraperitoneal fluid was demonstrable. The impression was gastric ulcer of the new-born, traumatic erosion of the esophagus, or hemorrhagic disease of the new-born. At midnight 50 cc. of physiologic solution of sodium chloride was given subcutaneously. The infant appeared listless. At 6 a. m., September 1, the baby became cyanotic, the respirations were rapid and it appeared critically ill. Blood was exuding from the rectum. The baby was placed in an oxygen unit and at 8 o'clock 40 cc. of the father's blood was given intravenously in an ankle vein. During the next nine hours the baby appeared to improve. The cyanosis had disappeared and there was only slight regurgitation of blood and little being passed by rectum. At 5 p. m. the infant suddenly became cyanotic, and twitching of the extremities appeared. At 6:10 respirations suddenly ceased and the baby died, fifty-nine hours and twenty-five minutes after birth.

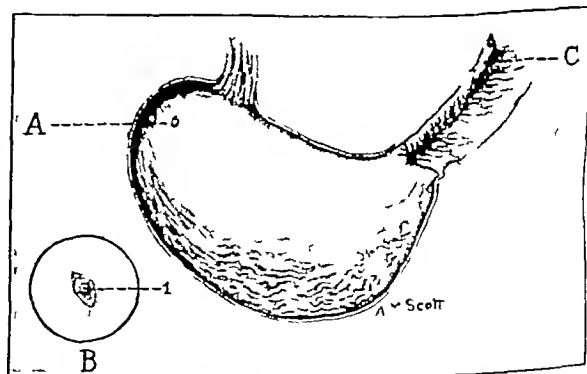


Fig. 3—A, gastric ulcer. B, enlargement of A. 1, small blood vessel in base of ulcer. C, anomalous extension of common bile duct through submucosa.

**Autopsy**—The essential pathologic changes were confined to the lungs, and the gastro-intestinal tract.

On macroscopic examination the lungs were subcapitate. The pleural surfaces were smooth and had a dark pink color. Sectioning showed a pink cut surface, which presented a few small dark red areas scattered throughout its substance. All five lobes presented a similar appearance. The trachea and large bronchi contained a small amount of purulent exudate. The stomach was dilated and filled with old clotted blood. In the cardiac region along the greater curvature there was a



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small superficial erosion which extended through the mucosa and submucosa (fig 3). This erosion measured 2 mm in diameter. In the base of the erosion there was a small blood vessel. The margins of the erosion were smooth and slightly undermined. The remainder of the intestinal tract was filled with clotted blood.

Microscopic examination of the lungs revealed many areas that contained little or no air. In these areas the alveolar walls were in opposition and the alveolar spaces were absent. In other areas the alveolar spaces contained much fibrin, extravasated red blood cells and polymorphonuclear leukocytes. In other areas normal air-containing lung was seen. In one area there was a small subpleural hemorrhage. The blood vessels of the lung were engorged with red blood cells.

The stomach was preserved for a museum specimen. No sections were taken.

## COMMENT

The outstanding features of the two cases presented are the persistent hematemesis of fresh blood with the onset occurring within the first thirty-six hours after birth. In case 1 there was no melena whereas in the second case melena was a prominent feature. Of significance also was the failure of the hemorrhages to cease following the administration of blood intramuscularly and by transfusion. Case 1 was characterized pathologically by the presence of multiple pin-head sized ulcerations extending through the mucosa, surrounded by a rim of necrotic tissue, and a complete atresia of the second portion of the duodenum proximal to the ampulla of Vater. In case 2 there was a solitary ulceration located along the greater curvature in the cardiac region, extending through the mucosa and submucosa exposing and eroding a small blood vessel.

Usually hemorrhagic disease of the new-born is characterized by the fact that the bleeding is spontaneous in origin, not related to delivery or primarily to trauma, is multiple in location, often tends to cease spontaneously after a limited time, and is influenced favorably by treatment, namely, injection of whole blood intramuscularly or by transfusion. The amount of blood lost is usually not great but there is continuous oozing. Bleeding from the gastro intestinal tract is a frequent site of origin of the spontaneous hemorrhages of the new-born. It is more common from the intestine than from the stomach and begins in the first three days of life. The blood vomited is usually not abundant and appears in dark brown clots, rarely it is bright red.

According to Holt,<sup>6</sup> in most instances autopsy shows little except the hemorrhage in the various locations and the paleness of the organs due to loss of blood. Rarely, ulcers are found in the stomach and duodenum.

Hematemesis is the chief symptom of ulcers of the stomach in the new-born unless complicated by perforation and peritonitis. According to Theile<sup>7</sup> as clinical manifestations hematemesis and melena were found in varying frequency dependent on the location of the lesions. Hematemesis occurred more frequently in gastric ulcer, whereas melena was more prevalent in the duodenal lesions.

In the reported cases, the distribution of the ulcers is about equally divided between the stomach and the duodenum, of Theile's group twenty-nine were gastric and thirty-one duodenal in location. There was no information available in four of his cases. Solitary ulcers are found with greater frequency in the duodenum than in the stomach where the incidence of single and multiple lesions is approximately equal.

The cause of ulcers in the stomach is obscure. Shore<sup>7</sup> believes that a local disturbance in the action of gastric juice is the mechanism of formation. He lists congestion due to asphyxia, embolism thrombosis vascular disease direct injury to the mucosa and nervous influences as contributory factors. Weiss and Mallory<sup>8</sup> mention vomiting as a cause of lacerations or ulcers in the cardiac end of the stomach. Dunham and Shelton<sup>9</sup> emphasize the role of sepsis as the cause of multiple gastric ulcers in the new-born.

In case 1 we believe that the presence of the duodenal atresia was an important etiologic factor. Hyperperistalsis with vomiting and the inability of the stomach to empty its contents might have resulted in injury to the gastric mucosa followed by auto-digestion. The possibility of sepsis is excluded by the failure of microscopic sections to reveal pathogenic organisms. As to the etiology of our second case we have no satisfactory explanation. The asphyxia present at birth could hardly be responsible for a single lesion. In view of the location of the lesion, it is remotely possible that the tracheal catheter used for resuscitation at birth accidentally entered the stomach and injured the mucosa.

104 South Michigan Avenue

## Council on Physical Therapy

THE COUNCIL ON PHYSICAL THERAPY HAS AUTHORIZED PUBLICATION OF THE FOLLOWING ARTICLE.  
HOWARD A. CARTER, Secretary

## MEDICAL DIATHERMY

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CHICAGO

Medical diathermy is the production of heat in the body tissues for therapeutic purposes by high frequency currents, insufficient in amount however, to produce temperatures high enough to destroy the tissues or impair their vitality. These currents are applied locally by three methods (1) with contact metal electrodes, (2) with a high frequency alternating electric field, or (3) with a high frequency electromagnetic field.

The first method is the one by which conventional diathermy is applied. The frequency of oscillations is usually from one-half million to two million cycles per second.

The second method for the local application of high frequency currents is the use of a high frequency electric field.<sup>1</sup> The frequency of oscillations may be from ten million to one hundred million cycles per second. The local part to be treated is placed between two insulated electrodes. The electrodes are not in contact with the skin, as with the conventional medical diathermy electrodes. These short wave diathermy electrodes are metallic plates insulated by rubber or felt. The electrodes are incased in rubber or felt arcing from the metal to the skin. When applied they are usually separated from the skin by a half-inch layer of dry felt or towels. The towel or felt is placed between the electrodes and the skin to prevent the accumulation of surface moisture into small conducting areas, which might produce burns.

The usual methods of applying electric field electrodes, not unlike those used in conventional diathermy are (1) to place a small condenser electrode over the part to be treated with a large dispersive electrode on the opposite side so that there is a concentration of heating effect under the area of the smaller electrode, (2) to place electrodes of the same size on opposite sides of the part undergoing treatment or (3) to use double cuff electrodes. Ordinarily these cuffs are placed so that the part to be treated is midway between them. When the double cuff is used on limbs with a joint involvement, it is important to be sure that the joint under treatment is extended. If the joint is flexed the current density will be much greater in the

1. For this method the Council on Physical Therapy is using the term short wave diathermy. It is also known as short wave therapy ultra short wave therapy radiotherapy and radiothermy.

6 Holt L. E. and Howland John. Diseases of Infancy and Childhood. New York D. Appleton & Co. 1926. p. 80.  
7 Shore B. R. Acute Ulcerations of the Stomach in Children. Ann Surg 92:234 (Aug) 1930.  
8 Weiss Soma and Mallory G. K. Lesions of the Cardiac Orifice of the Stomach Produced by Vomiting. J. A. M. A 98:1353 (April) 1932.

shorter path. Of the three, the double cuff method, according to recent experiments,<sup>2</sup> always showed superior heating of the deep tissues of the human thigh, in fact, this mode of application of electric field electrodes was the only one in these experiments that insured better heating of the deep tissues than was obtained with conventional diathermy employing contact electrodes applied opposite each other.

It is believed that with the high frequency electric field the point of entry of the current should be large enough so that the current density per unit area (1 e, temperature) will not exceed skin tolerance. The importance of this is shown in the work of Mortimer and Osborne,<sup>2a</sup> in which the tolerance of the patients controlled the current intensity. High frequency electric energy applied by pad electrodes of equal size, placed on opposite sides of the thigh, caused heating of 12 degrees F in the quadriceps extensor muscle 1½ inches below the anterior skin surface (average of eight subjects), whereas, with cuff electrodes having a greater area of entry for the current, the temperature rise at the same point below the surface was 48 degrees F. In this work, one cuff electrode was placed around the thigh proximal to the thermocouple and the other distal to it.

The sensation of temperature experienced by a patient is no indication of the amount of heat being developed in the deeper tissues. Experiments<sup>2a</sup> show that, with short wave apparatus utilizing electric field electrodes, excessively high superficial temperatures may be secured, yet only a negligible increase in temperature may be obtained in the deep tissues.

The relative efficacy of the various methods of applying short wave high frequency currents under identical experimental conditions is: 1. Cable and coil, or double cuffs. 2. Electric field electrodes. 3. Glass or composition, air-separated electrodes.<sup>2</sup>

By the electric field method, it is assumed that the heat is due to the ohmic resistance of tissues to high frequency alternating currents passing through them, or, again, it may be due to dielectric losses within the tissues in the electric field, others believe that the resulting heat may be a combination of the two effects.

The third method of heating tissues by high frequency currents is by electromagnetic fields, or so-called electromagnetic induction. In this method the current is conducted to the patient through a flexible, heavily insulated cable, which is wound around the part to be treated in the form of coils or loops. The part to be treated is separated from the coil or loop by a towel for the same reason noted under the second method.

The exact physical phenomena taking place within the tissues, causing generation of heat, have not been fully explained. However, it is believed that within the helical coil, through which the high frequency current flows, there is set up an alternating magnetic flux having the same frequency as the current in the coil. If a conductive material is placed within the coil, an electromotive force will be induced in it. As a result of this induced voltage, eddy currents of the same frequency as the exciting current will flow in the conductive material, generating heat in the tissues.

Burns may occur with any method of applying short wave medical diathermy, as well as when using the contact metal electrodes of conventional diathermy. The manufacturers of short wave machines claimed in

their early advertising matter that burns were impossible. The Council was unable to accept these claims, since evidence was available that burns did occur with short wave diathermy.<sup>3</sup>

To avoid burns, several layers of absorbent material are placed between the electrodes of the short wave diathermy machine and the skin, to absorb perspiration. The collection of moisture between the skin and the electrodes would cause a concentration of energy at these points, and burns would result if the patient did not indicate that there was a burning sensation. The patients who have been burned have had a distinct sensation of burning. This would be expected, as the subcutaneous tissues are always warmer than the deeper tissues. Such burns resemble those obtained by electrocoagulation and they are slow in healing.

#### PHYSIOLOGIC EFFECTS OF LOCAL MEDICAL DIATHERMY

The effects of an electric current when applied to the body tissues may be thermal, chemical or mechanical in nature, depending on the physical characteristics of the current. High frequency currents apparently avoid the mechanical and chemical effects but have the ability to heat the body tissues through which they pass. At the present time it is believed that the local physiologic effects of the three methods of applying high frequency currents are limited to the effects of the heat produced.

*Vasomotor Changes*—In the application of heat to body tissues, with temperatures between 64 and 102 F, a large number of capillaries are opened, the rate of blood flow through these capillaries is increased, the tissue metabolism is accelerated, and the rate of exchange between the blood and tissues is augmented and reaches its optimum. The blood entering the vein contains from 60 to 65 per cent of its saturated value of oxygen. Above 102 F more capillaries are opened, and the flow of blood may become so rapid that when it enters the veins it stimulates the arterial blood, and the concentration of oxygen may reach about 91 per cent of its saturated value. The rapid circulation increases the thermal conductivity of the tissues and distributes the heat through the body and thus hinders the rise in local temperature. The changes are due partly to nervous reflexes and consequently may involve distant areas not primarily affected by the temperature change.<sup>4</sup>

*Capillary Pressure and Fluid Interchange*—When heat is applied to an area, the superficial capillaries and veins are dilated, the blood flow is increased and the capillary pressure is raised. The hypothesis, according to Bazett,<sup>5</sup> is that fluid interchange between the blood and the tissue fluids depends normally on a simple balance between the hydrostatic pressure of the blood in the capillaries and the osmotic pressure of the protein colloids, which enables them to pass the capillary wall and exert an attractive force on watery solutions of diffusible substances. A rise of surface temperature that increases the local circulation rate and raises capillary pressure will increase the rate of edema formation when the venous pressure is maintained at a constant level. Therefore a rise of temperature must be expected to increase lymphatic drainage greatly and this may be of value in modifying disease conditions.

3 (a) Krusen, F. H. Short Wave Diathermy. J. A. M. A. 104:1237 (April 6) 1935. (b) Kling, D. H. Burns Produced by Radio Short Wave and Ultra Short Wave Therapy. *ibid.* 104:1918 (June 1) 1935.

4 Gibbon, J. H. Jr. and Landis, E. M. J. Clin. Investigation 11:1019 (Sept.) 1932.

5 Bazett, H. C., in Principles and Practice of Physical Therapy. Hagerstown, Md., W. F. Prior Company 1:4 1934.

2 (a) Mortimer, Bernard and Osborne, S. L. Tissue Heating by Short Wave Diathermy. J. A. M. A. 104:1413 (April 20) 1935. (b) Mortimer, Bernard and Beard, Gertrude. Tissue Heating by Short Wave Diathermy. *ibid.* 105:510 (Aug. 17) 1935.

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It may prove to be a detriment in certain conditions, and when lymphatic drainage is obstructed the collection of fluid might cause pressure on venous channels and so, secondarily, interfere with circulation. Edema is not detectable until a collection of at least 8 cc per hundred cubic centimeters of tissue has occurred. This may explain the poor results seen in the local application of medical diathermy in chronic arthritis, for Pemberton<sup>7</sup> states that it is justifiable to entertain the hypothesis that the rheumatoid syndrome is partially characterized by a condition of low-grade edema of the tissues which is more or less systemic in nature.

**Blood**—Bazett<sup>6</sup> states that when blood is warmed the dissociation constants of the acid radicals of the proteins are increased to a much greater extent than is that of carbonic acid. In consequence, if blood is warmed and the total carbon dioxide content is constant, the proteins combine with much base previously in the form of sodium or potassium bicarbonate, the carbon dioxide thus freed is added to the free carbonic acid originally present, the acidity is greatly increased, and the carbon dioxide tension is further exaggerated by diminution in its solubility. An alteration of 1.8 degrees F causes an increase in acidity comparable to the normal difference between arterial and venous blood.

Bazett further states that, "in spite of the great changes in the venosity of the blood, the direct effect of the temperature changes on the blood far outbalances them, so that changes in acidity, etc., are mainly determined by the latter factor." His figures on this subject show that the great changes in gas tension and acidity may be of some importance in modifying the reaction of tissues to infections. With a surface temperature of 62.6 F, the carbon dioxide tension was between 15 and 20 mm and the oxygen tension between 15 and 30 mm while, with a surface temperature of 107.6 F and a blood temperature of 104 F, the carbon dioxide tension was 45 mm and the oxygen tension between 70 and 95 mm.

**Phagocytosis**—Bazett<sup>6</sup> states that the activity of leukocytes in phagocytosis is probably greatly modified by temperature. The locomotion of leukocytes in vitro is certainly so affected, the maximal velocity is reached at 104 F.

**Metabolism**—Any change in temperature has a profound effect on the metabolic changes in any tissue. Bazett<sup>6</sup> states that, where this effect may be observed on isolated organs, the change is such that these chemical changes are increased two or three times for a rise of 1.8 degrees F.

**Special Selective Thermal Action**—By means of short wave diathermy, numerous in vitro experiments have been used to prove that short wave diathermy currents have special selective thermal action. Mortimer and Osborne<sup>2a</sup> in their work made a digest of the literature on this subject. They demonstrated by experiments on human subjects, with thermocouples inserted into the subcutaneous tissues and into the quadriceps extensor muscle for approximately two inches, that the greatest rise of temperature was in skin and in subcutaneous tissues under the electrodes, that this temperature was always higher than the intramuscular temperature, and that the body strives to dissipate and distribute the heat as rapidly as possible, as shown by the rise in mouth temperature. There-

fore, with short wave diathermy as with conventional diathermy, there is a thermal gradient from the hot skin and subcutaneous tissues to the less hot tissues within.

**Specific Biologic Action**—Mortimer and Osborne<sup>2a</sup> state "There is no conclusive evidence from the literature nor were we able to substantiate the claim of specific biologic action of high frequency currents (short wave diathermy). In our opinion the burden of proof still lies on those who claim any biologic action of these currents other than heat production."

**Specific Bactericidal Action**—Many claims for specific bactericidal action have been made for the short wave diathermy currents. In a recent digest of the literature on this subject,<sup>2a</sup> it would seem that confirmation of these claims is lacking. At present, the results can be explained only on the basis of the heat generated.

## INDICATIONS

Karsner and Goldblatt<sup>8</sup> state that, when one is investigating methods used in physical therapy, the evaluation of the treatment is not to be measured by the opinions of the physician but rather by the facts one can demonstrate. The main essential in any experiment in therapy is that observations with the particular form of treatment must be controlled and checked in a series of patients without treatment. The number of observations must be large enough to minimize some of the disadvantages of random sampling.

In a recent advertisement for a short wave diathermy machine, there was noted a list of about 130 diseases that were supposed to be benefited by short wave diathermy. This list was alphabetically arranged, beginning with abscess and ending with verruca nevus. Surely this list did not fulfil the conditions mentioned by Karsner and Goldblatt<sup>8</sup>.

For the present, it is believed that the general practitioner will avoid unpleasant and disagreeable circumstances if he accepts and follows the indications and contraindications suggested for conventional diathermy in his short wave diathermy practice.

Well established evidence indicates that the local application of heat is effective as an adjunct in the treatment of certain traumatic or inflammatory changes in the bones, joints, bursae, muscles, ligaments and tendons.<sup>9</sup> Both long and short wave diathermy are effective methods of applying heat and can be used to advantage for many of these conditions. There is no available evidence that medical diathermy has any effect other than that due to the heat produced, therefore it should be used only as an adjunct to other treatment in the conditions mentioned in an article by Gill<sup>9</sup> dealing with the application of heat.

Treatment of bursitis by means of diathermy has many advocates. In an earlier article, I<sup>10</sup> wrote "In considering the reported results of diathermy in calcified subdeltoid bursitis, it is wise to remember that in some cases these deposits disappear without any treatment whatever. If the deposit of a calcium salt reacts like any other calcium deposit, in that it may form without an apparent cause, it is often fragmented and may disappear spontaneously as well as under the influence of such treatment as diathermy." In the sharply localized and tender deposits, it is sometimes simpler and

6 Bazett H C Arch Phys Therapy 13 453 (Aug) 1932  
7 Pemberton Ralph Arthritis and Rheumatoid Condition Philadelphia Lea & Febiger 1935  
8 Karsner H T., and Goldblatt Harry Evaluation of Methods Used in Physical Therapy J A M A 100 1495 (May 13) 1935  
9 Gill A B Heat in Surgical and Orthopedic Conditions J A M A 106: 40 (Jan. 4) 1936  
10 Coulter J S Medical Diathermy J A M A 98 1987 (June 4) 1932

quicker to remove the calcified deposit by a small incision and a curet, or by injecting the bursa and, if possible, the deposit with physiologic solution of sodium chloride under considerable pressure in order to distend the bursa and dissipate the deposit, as Dr Smith-Petersen has advocated.

In arthritis, the use of diathermy is sometimes observed to give benefit from a clinical point of view, but it is contraindicated and has been disappointing in many chronic cases. At times medical diathermy in arthritis causes an aggravation of the local symptoms.

If some short wave machines can give such marked temperature increases in deep tissues, Pemberton and Osgood's<sup>11</sup> warning relative to the application of medical diathermy to superficial joints should be remembered. They state:

In many of the superficial joints, however, real danger of harm lurks in any but the most skilful administration of diathermy. The articular cartilage of joints is devoid of both sensation and circulation, possessing neither protective nerves nor cooling blood vessels. Moreover articular cartilage has no power of regeneration, and, if injured, has little power of repair. Suggestions of irreparable damage to this essential structure from the injudicious administration of diathermy to the knee joint have come within the purview of the writers and we believe the danger is not theoretical but very real. It has become more imminent since there has been recently such a successful marketing of these machines to physicians who possess no working knowledge of either electricity or physics. This method of applying heat has a very definite place but presumes an intimate acquaintance with both the varying resistance of body tissues and the technical application of this modality.

The action of diathermy in stimulating consolidation of a fracture must be regarded as distinctly *sub judice* until additional evidence has been obtained, according to Wilson.<sup>12</sup> He also states:

In the meantime, if the effect of diathermy is to be tried in cases of delayed union, it will be advisable to limit its use to those fractures where no mechanical causes exist to account for the retarded healing, such as interposition of tissue between the fragments or lack of proper reduction, and also to use it not later than three or four months after the injury. Beyond this period the local situation in respect to callus formation has become so static that it is impossible to see how heat or hyperemia would be of any assistance.

Many claims have been made for the use of short wave diathermy in the treatment of infections such as furuncles and abscesses. Infections have been treated for years with heat in the form of continuous hot, moist dressings. It is questionable whether the greater heat of short wave diathermy applied for short periods could replace these hot, moist dressings or improve on the results obtained with them. It is believed that, until otherwise proved, the contraindication for conventional diathermy in acute inflammatory processes such as acute nondraining cellulitis still holds for short wave diathermy. Hot, moist dressings and proper drainage for superficial infections are still the best surgical procedures for these conditions.

Bierman and Schwarzschild,<sup>13</sup> who have treated infections with short wave diathermy, say:

It is therefore not necessary to ascribe any specific effects of the short wave currents upon micro-organisms to explain the beneficial influence of a procedure which creates heat in the

involved area with a thoroughness greater than any other measure used thus far. It is our definite impression that when drainage does exist, the infected process usually appears to heal very much more rapidly following short wave applications than with any other forms of treatment we have used heretofore.

In the management of pneumonia, medical diathermy does seem to be of definite benefit in reducing the severity of the thoracic pain. It is not an accepted specific treatment in lobar pneumonia. Binger<sup>14</sup> says: "There is no reason to believe that exudates will melt as the result of diathermy." His experiments with conventional diathermy reveal no evidence that the temperature of the pneumonic lung can be raised to more than a degree above the systemic temperature. Tillett<sup>15</sup> says: "By means of diathermy, attempts have been made to influence the course of pneumonia through the direct application of heat to the diseased lung. The reports so far made record favorable results, but the instances are too few to be convincing."

Medical diathermy has been recommended in the treatment of nephritis, but no recent literature substantiates the earlier claims of benefit, and the mass of experimental work would indicate that it could not have much influence on kidney function.

For treating gonorrheal urethritis, the use of conventional diathermy has been discounted in recent text books of urology and is not advocated as a treatment for acute urethritis. Gonococcus in culture will survive thirty minutes at a temperature of 113 F, and even with the improved short wave machines there is little prospect of attaining this temperature with local treatment in all parts of the male urethra without overheating certain parts.

Harrison<sup>16</sup> believes that diathermy is the treatment of choice in those cases of acute prostatitis occurring either as a complication of an acute urethritis or in that smaller group of cases in which the infection is hematogenous from disease elsewhere, such as influenza. Referring further to chronic prostatitis, Harrison writes of diathermy: "It is true that the symptoms are relieved, but in other respects the condition is similar to that in cases treated by digital massage, in other words, discouraging."

In acute epididymitis, the elevation of temperature by diathermy is distinctly beneficial for the relief of pain and hastens the subsidence of the infection. It has been questioned whether medical diathermy should be used, because its heat might destroy temporarily or permanently the spermatogenic function of the testicle, and, if so, such an objection would be even more applicable to some of the short wave appliances as they generate deeper heat than contact, metal electrode diathermy. Of course, the disease itself destroys spermatogenic function. If used in acute epididymitis, medical diathermy should be used only as an adjunct to rest in bed with the testicles elevated, forcing of fluids, and possibly nonspecific protein therapy.

When treating acute arthritis, which occurs as a complication of acute gonorrheal urethritis, the treatment, in the opinion of Harrison,<sup>16</sup> should be directed accordingly (1) to the acute urethritis, (2) to the sterilization of the blood stream and what results may be accomplished by chemotherapy, and (3) to the joint. Here diathermy produces beneficial results.

11 Pemberton Ralph and Osgood R B The Medical and Orthopaedic Management of Chronic Arthritis New York, Macmillan Company 1934

12 Wilson P D in Principles and Practice of Physical Therapy 1 5 1934

13 Bierman William and Schwarzschild Myron New England J Med. 213: 515 (Sept 12) 1935

14 Binger Carl in Principles and Practice of Physical Therapy 1 15 1934

15 Tillett W S Cyclopedia of Medicine Philadelphia F A Davis Company 9 1934

16 Harrison F G in Principles and Practice of Physical Therapy 2 21 1934

Diathermy has been used in arterial hypertension and has been recommended for a number of years, but, as is so often the case, the subjective improvement is without any appreciable change in the blood pressure,<sup>17</sup> at least for any extended period of time.

Medical diathermy in otolaryngology has been widely advocated. Beck and Guttman<sup>18</sup> give views on the use of contact, metal electrode diathermy that might be adopted by the general practitioner. When treating otitis media, they state, "the use of diathermy is contraindicated before the rupture of the drum and after incision it is of little benefit." For acute mastoiditis, "medical diathermy is mentioned only to be condemned in such conditions." For chronic otorrhea, they state, "as a rule we have seen little or no benefit follow the use of medical diathermy in spite of the enormous amount of literature dealing with the use of these agents in this condition." In the management of deafness, their opinion is that medical diathermy has caused little if any benefit in deafness due to chronic adhesive otitis media, otosclerosis or labyrinthine deafness. They state that in tinnitus aurium diathermy has been repeatedly advocated, but that in their hands it has been attended with little success. In chronic sinusitis they had the same negative results.

The indications for medical diathermy in diseases of the eye are by no means well established according to Gifford.<sup>19</sup> Medical diathermy may relieve pain in the neuralgia of herpes zoster. Monbrun and Casteran<sup>20</sup> report good results in certain corneal ulcers, especially those following facial paralysis. These authors advise against the employment of medical diathermy in intra-ocular diseases and consider it especially contraindicated in glaucoma.

Diathermy has been advocated by some as having value in improving the circulation in circulatory disturbances of the extremities.<sup>10</sup> It may be used locally or to induce an artificial increase of temperature. Great care should be exercised to avoid burns. It should be used as an adjunct to other forms of treatment and usually combined with circulatory exercises, continuous heat with an electric baker, and warm baths. Early cases of circulatory impairment may be definitely benefited, and the progress of the disease may be arrested. However, it is clear that in a complete vascular occlusion, with adequate collateral circulation, such measures can only fail and do no good.<sup>21</sup> It should be remembered that in these conditions Starr<sup>22</sup> found that a temperature of from 33 to 35 C usually relieves pain, and temperatures above or below this optimal temperature may increase the pain.

Medical diathermy may be used in salpingitis as an adjunct to the usual methods of treatment. The application is either with electrodes over the suprapubic area and over the sacrum or with a special vaginal electrode and a belt electrode encircling the waist. In pelvic inflammatory diseases the good that diathermy accomplishes is in all probability due to the increase in circulation brought about by the local application of heat, rather than from any heat generated in the tissues themselves, and surely not from any destruction of bacteria by heat.

Little evidence has appeared in recent literature suggesting the favorable effects of medical diathermy in pelvic infections. In the most recent literature advocating the use of heat for this condition, one finds an objection to using an electrode in the vagina. In normal conditions the vaginal mucous membrane is in rugae or folds and, in inflammatory conditions, these may be greatly increased, so that the temperature produced from an electrode would be quite unevenly distributed.<sup>23</sup>

For the application of short wave diathermy it is to be noted that no satisfactory official electrode has yet been devised.<sup>24</sup> With electrodes over the symphysis and under the buttocks, Schultze-Rhonhof and Rech<sup>24</sup> applied short wave diathermy to the pelvis and measured the temperature in the urine-filled bladder, vagina and rectum with alcohol thermometers. They concluded that a pronounced heat effect could not be recognized in these regions although a noticeable heating of the skin was obtained.

#### DOSEAGE

When medical diathermy is used, the patient's skin tolerance to temperature must regulate the dosage. The milliammeter on the high frequency apparatus does not measure the electrical energy passing through the patient. The patient's tolerance is the most important guide for the final dosage to be used. If it is suspected that the heat sensation of the skin over which the electrodes are placed is subnormal, it is advisable to test the skin with hot water in a test tube.

It is to be emphasized that when treating with short wave diathermy there should be no clothing between the electrode and the skin. If a patient should receive a burn from a treatment by short wave diathermy and the clothes had not been removed, there might arise a medicolegal situation that would be embarrassing to the physician. Inspection of the skin of the part treated following the treatment is important.

Kovacs<sup>25</sup> calls attention to the fact that the regulation of dosage with short wave diathermy is an even more empirical procedure than with ordinary diathermy. The milliamperemeter is connected to the oscillatory circuit of the apparatus and serves chiefly as an indicator that electrical energy is passing. It will also indicate that in a certain position of the controls, when the patient's circuit is tuned to the main oscillator circuit, there is a maximum flow of energy in the treatment field, but it does not indicate that the energy is passing through the patient.

#### CONTRAINDICATIONS

The local applications of high frequency currents are contraindicated (1) in acute inflammatory processes, such as acute non draining cellulitis, acute infectious arthritis, and acute pelvic infection, (2) in any condition in which there is a tendency to hemorrhage, such as a gastric ulcer, (3) over areas in which the appreciation of heat has been impaired or lost, as in certain peripheral nerve injuries, (4) through the abdomen, pelvis or lower part of the back during pregnancy, during menstruation or thirty-six hours before or after menstruation, (5) over areas where there is a suspected malignant growth, and (6) in diseases or injuries in which simpler methods of applying external heat give satisfactory results.<sup>26</sup>

17 Hay John and Ince Phoebe. *Lancet* 2: 799 (Oct. 16) 1926 quoted by R. S. Palmer. *New England J. Med.* 203: 208 (July 31) 1930.

18 Beck J. C. and Guttman M. R. in *Principles and Practice of Physical Therapy* 2: 24 1934.

19 Gifford S. R. in *Principles and Practice of Physical Therapy* 2: 23 1934.

20 Monbrun and Casteran. *La haute fréquence en ophtalmologie*, Paris: Masson & Co. 1929.

21 de Takáts Geza. *Illinois M. J.* 61: 79 (Jan.) 1932.

22 Starr Isaac Jr. *Am. J. M. Sc.* 187: 498 (April) 1934.

23 Counseller V. S. *Treatment of Chronic Infection of the Pelvis* J. A. M. A. 101: 916 (Sept. 16) 1933.

24 Schultze-Rhonhof F. and Rech W. *Arch. f. Gynak.* 157: 468 (Aug.) 1934.

25 Kovacs Richard. *Electro Therapy and Light Therapy* ed. 2 Philadelphia, Lea & Febiger 1935.

26 Coulter J. S. and Osborne S. L. in *Principles and Practice of Physical Therapy* 2: 22 1935.



## CONCLUSIONS

1 The indications for short wave diathermy are essentially the indications for conventional diathermy. However, it may be shown later that the superior heating ability of certain high frequency apparatus will be effective when conventional diathermy has failed. Further research and careful evaluation of clinical results are required.

2 So far as competent investigators have been able to determine, there is no demonstrable, selective thermal action *in vivo*, nor specific biologic or bactericidal actions that may be attributed to short wave diathermy. To date, the effects produced can be explained only on the basis of the generation of heat.

303 East Chicago Avenue

## Council on Pharmacy and Chemistry

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH, Secretary

**MAPHARSEN**—The hemialcoholate of 3-amino-4-hydroxy phenylarsine oxide hydrochloride.— $\text{HCl}(\text{NH}_2)\text{C}_6\text{H}_4(\text{OH})\text{AsO} \frac{1}{2}\text{C}_2\text{H}_5\text{OH}$ . It contains approximately 29 per cent of trivalent arsenic.

**Actions and Uses**—Mapharsen is proposed for the treatment of syphilis. It is stated to exhibit a relatively constant parasitocidal value. It is claimed to have a rapidly beneficial effect, particularly on early syphilis, with disappearance of spirochetes, healing of lesions, and reversal of positive Wassermann reactions in a large percentage of cases. The reactions following the use of mapharsen have on the whole been less severe than those observed after the use of arsphenamine or neoarsphenamine.

**Dosage**—Intravenously, 0.03 Gm. for women and 0.04 Gm. for men, initially. The dose may be increased at the second injection to 0.04 Gm. for women and 0.06 Gm. for men. The maximum weekly dose, which should not be given any patient at the first injection, may be regarded as 0.06 Gm. For children the initial dose should not exceed 0.0005 Gm. (0.5 mg.) per kilogram of body weight; the total weekly dose should average between 0.0005 and 0.001 Gm. (between 0.5 and 1 mg.) per kilogram of body weight.

It should be noted that the safe dosage of mapharsen is much lower than that of the arsphenamines.

Manufactured by Parke Davis & Co., Detroit. U. S. Patent applied for. U. S. trademark 299, 173.

**Ampoules Mapharsen 0.04 Gm.** Each ampule contains mapharsen 0.04 Gm., anhydrous sodium carbonate 0.010 Gm. and anhydrous purified sucrose 0.149 Gm.

**Ampoules Mapharsen 0.06 Gm.** Each ampule contains mapharsen 0.06 Gm., anhydrous sodium carbonate 0.016 Gm. and anhydrous purified sucrose 0.224 Gm.

**Ampoules Mapharsen 0.4 Gm.** Each ampule contains mapharsen 0.4 Gm., anhydrous sodium carbonate 0.10 Gm. and anhydrous purified sucrose 1.49 Gm. **CAUTION:** This ampule is a hospital package and represents ten doses of 0.04 Gm. each.

**Ampoules Mapharsen 0.6 Gm.** Each ampule contains mapharsen 0.6 Gm., anhydrous sodium carbonate 0.16 Gm. and anhydrous purified sucrose 2.24 Gm. **CAUTION:** This ampule is a hospital package and represents ten doses of 0.06 Gm. each.

Mapharsen occurs as a white amorphous odorless powder. It is soluble in water, alcohols, acids, alkalis and alkali carbonates. The aqueous solution is acid to methyl red but alkaline to congo red.

Add 0.5 Gm. of sodium hydroxide to about 0.1 Gm. of mapharsen dissolved in 10 cc. of water; a yellow precipitate separates. Add sodium carbonate solution drop by drop to a 1 per cent aqueous solution of mapharsen; no precipitate is formed (distinction from arsphenamine). Add diluted hydrochloric acid to a 1 per cent aqueous solution of mapharsen; no precipitate is formed (distinction from neoarsphenamine).

Add 2 cc. of colorless 20 per cent hydriodic acid to about 0.02 Gm. of mapharsen; a color not deeper than a lemon yellow is produced (3-amino-4-hydroxy phenyl arsenic acid).

Transfer about 0.15 Gm. of mapharsen accurately weighed to a wide mouth weighing bottle and dry to constant weight in a vacuum desiccator over phosphorus pentoxide; the sample loses not more than 2 per cent.

Dissolve about 0.1 Gm. of mapharsen accurately weighed in 25 cc. of distilled water titrate with tenth normal iodine solution using a starch indicator; the trivalent arsenic is not less than 28.2 per cent nor more than 29.5 per cent.

Dissolve about 0.2 Gm. of mapharsen accurately weighed in 5 cc. of sulfuric acid in a 250 cc. Erlenmeyer flask; add 1 cc. of nitric acid; heat on the hot plate for an hour; add 1 cc. of nitric acid; heat on the hot plate until the solution is clear and colorless; cool; add 10 cc. of water; heat on the hot plate until white fumes appear; cool; transfer to a 600 cc. beaker; dilute to about 100 cc.; make the solution alkaline to litmus paper by adding stronger ammonia water; add stronger ammonia to the amount of one third of the volume; add 20 cc. of ammonium chloride and 25 cc. of magnesia mixture. Allow to stand over night; collect the precipitate in a tared gooch crucible; wash the precipitate with dilute ammonia water (1 volume of stronger ammonia water with 2 volumes of water) dry at 100°C. heat in a muffle furnace at 400°C. for four hours, then gradually raise the temperature to 800°C.; cool in a desiccator and weigh the arsenic calculated on the dry basis; is less than 30 per cent.

Dissolve about 0.1 Gm. of mapharsen accurately weighed in about 25 cc. of distilled water; titrate to the green color of brom thymol blue with tenth normal sodium hydroxide solution; the hydroxide chloride calculated on the dry basis is not less than 14.0 per cent nor more than 14.7 per cent.

**IPRAL SODIUM** (See THE JOURNAL, June 1, 1935, p. 1999; also Nov. 30, 1935, p. 1772).

The following dosage forms have been accepted:

**Capsules Ipral Sodium 2 grains**

**Ipral Amidopyrine Tablets 4.53 grains** Each tablet contains ipral (ethylisopropyl barbituric acid) 2 grains and amidopyrine 2.33 grains.

**SQUIBB STABILIZED HALIBUT-LIVER OIL** (See New and Nonofficial Remedies 1935, p. 300).

The following dosage forms have been accepted:

**Squibb Cod Halibut Liver Oil** A blend of oils from the livers of the cod and the halibut in such proportions that the finished product has a vitamin potency of not less than 4,200 vitamin A units (U. S. P. XI) per gram and 700 vitamin D units (U. S. P. XI) per gram.

**ANTIDYSENTERIC SERUM** (See New and Nonofficial Remedies, 1935, p. 375).

Lederle Laboratories, Inc., Pearl River, N. Y.

**Antidysenteric Serum (Polyvalent)** (See New and Nonofficial Remedies, 1935, p. 375).—Marketed in vials containing 20 cc.

## Committee on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG, Secretary

- 1 FAULTLESS BRAND CRYSTAL WHITE SYRUP
- 2 JACK SPRAT BRAND CRYSTAL WHITE SYRUP
- 3 MARSHALL BRAND CRYSTAL WHITE SYRUP
- 4 UNCLE WILLIAM BRAND CRYSTAL WHITE SYRUP

**Distributors**—2 Jack Sprat Foods, Inc., Marshalltown, Iowa  
3 and 4 Marshall Canning Company, Marshalltown, Iowa

**Packer**—Marshall Canning Company, Marshalltown, Iowa.

**Description**—Table syrup, corn syrup sweetened with sucrose.

**Manufacture**—Corn syrup and sucrose syrup are mixed, heated and packed as described for Faultless Brand Golden Syrup (THE JOURNAL, Nov. 30, 1935, p. 1773).

**Analysis** (Submitted by packer)—

|                                   | per cent |
|-----------------------------------|----------|
| Moisture                          | 25.5     |
| Total solids                      | 74.5     |
| Ash                               | 0.3      |
| Fat (ether ext-act)               | 0.0      |
| Protein (N X 6.25)                | 0.04     |
| Reducing sugars as dextrose       | 36.5     |
| Sucrose (copper reduction method) | 16.6     |
| Dextrins (by difference)          | 21.1     |

(No methods are available for accurately determining the composition of syrups of this nature, therefore the foregoing analysis is roughly approximate.)

**Calories**—3 per gram 85 per ounce

**Claims of Packer**—Recommended for use as an easily digestible and readily assimilable carbohydrate supplement to milk in infant feeding and as a syrup for cooking, baking and the table.

**SKIPPY IMPROVED PEANUT BUTTER (OIL  
MODIFIED BY HYDROGENATION)**

*Manufacturer*—Rose Field Packing Company, Ltd., Alameda, Calif

*Description*—Peanut butter, the oil of which has been hydrogenated, seasoned with salt

*Manufacture*—Peanuts are roasted, cooled, mechanically treated to remove the embryo and red skin and inspected to remove any foreign matter or defective nuts. A definite percentage of the oil is expressed, which is neutralized, deodorized and hydrogenated. The resultant peanut cake from the oil press is ground, mixed with the hydrogenated peanut oil and salt, ground, and automatically filled into cans

*Analysis* (submitted by manufacturer) —

|  | per cent |
|--|----------|
| Moisture   | 0.4      |
| Total solids   | 99.6     |
| Ash  | 3.1      |
| Fat (ether extract)                                  | 49.1     |
| Free fatty acids (as oleic acid)                     | 0.3      |
| Protein (N $\times$ 6.25)                            | 30.8     |
| Reducing sugars as invert sugar                      | 0.0      |
| Sucrose  | 4.4      |
| Crude fiber  | 9        |
| Carbohydrates other than crude fiber (by difference) | 11.3     |

*Calories*—6.3 per gram 179 per ounce

*Claims of Manufacturer*—The peanut oil content will not separate

**HAWAIIAN PINEAPPLE**

- (1) FALL LEAF BRAND SLICED, TIDBITS, AND CRUSHED
- (2) HALE'S PRIDE BRAND LUMPS O GOLD
- (3) RADIO BRAND CRUSHED AND SLICED
- (4) SUPREME COURT BRAND CRUSHED AND SLICED
- (5) W G Y BRAND CRUSHED, SLICED AND TIDBITS

*Distributors*—(1) Henry Soodsma & Co Paterson, N J  
(2) Hale-Halsell Company, McAlester, Okla (3) M J Caplan Co, Inc, Lawrence, Mass (4) The W H Dunne Company, Norwich N Y, (5) Jonathan Levi Co, Inc, Schenectady, N Y

*Packer*—Hawaiian Pineapple Company Ltd. San Francisco

*Description*—Canned pineapple packed in concentrated pineapple juice with added sucrose. The same as Dole canned pineapple (THE JOURNAL, April 8, 1933, p 1106)

**KRIM-KO CHOCOLATE FLAVORED DRINK**

*Bottlers and Distributors*—

Avondale Farms, Knoxville, Tenn  
 Beaver Dam Dairy Co, Beaver Dam Wis  
 M Brenner, Inc., Poughkeepsie, N Y  
 Capitol Dairies, Inc., Indianapolis  
 Donegan Certified Dairy, Largo Fla  
 Gear Dairy Company Menasha, Wis  
 Greenville Sanitary Dairy Greenville S C.  
 Gustafson Ice Cream and Dairy Company, Rice Lake Wis  
 Little Dairy, Hanovia Pa  
 Marion Pure Milk Company Marion, Ind.  
 Mid West Dairy, Benton, Ill  
 Model Milk and Ice Cream Co., Terre Haute, Ind  
 Powell Dairy Company, Meadville, Pa  
 Quality Dairy, Booneville, Ind  
 Reading Dairy Reading Pa.  
 Rushing's Dairy, Du Quoin Ill  
 Sagal-Lou Farm Branford Conn  
 E. W Seiberg Co., Jamestown, N Y  
 Square Deal Dairy, Willard Ohio

*Licensor*—Krim Ko Company Chicago manufactures the Krim-Ko Chocolate Flavored Drink Base and licenses its use, the name Krim Ko and standard advertising under definite contract conditions

*Description*—Pasteurized chocolate flavored sweetened skim milk, contains skim milk (from 0.5 to 1.5 per cent milk fat), sucrose, chocolate and cocoa, tapioca flour, salt and traces of tartaric acid and agar, flavored with imitation vanilla, vanillin and coumarin. See Krim-Ko Chocolate Flavored Drink (THE JOURNAL, June 30, 1934, p 2187)

**CELLU BLACK RASPBERRIES PACKED IN  
WATER WITHOUT ADDED SUGAR  
OR SALT**

*Distributor*—The Chicago Dietetic Supply House, Inc., Chicago

*Packer*—Eugene Fruit Growers Association Eugene, Ore.

*Description*—Canned cooked black raspberries packed in water without added sugar or salt.

*Manufacture*—The method of manufacture is essentially the same as for Cellu Blackberries Packed in Water Without Added Sugar or Salt (THE JOURNAL, September 28 1935, p 1039)

*Analysis* (submitted by distributor) —

|  | per cent |
|--|----------|
| Moisture   | 84.9     |
| Total solids   | 15.1     |
| Ash  | 0.6      |
| Fat (ether extract)                                  | 1.1      |
| Protein (N $\times$ 6.25)                            | 1.1      |
| Reducing sugars as invert sugar                      | 5.1      |
| Sucrose  | 0.6      |
| Crude fiber  | 3.3      |
| Carbohydrates other than crude fiber (by difference) | 9.0      |

*Calories*—0.5 per gram 14 per ounce

*Claims of Distributor*—For diets in which sweetened fruit is proscribed

**HERSHEY'S MILD AND MELLOW MILK  
CHOCOLATE**

*Manufacturer*—Hershey Chocolate Corporation, Hershey, Pa.  
*Distributor*—Chocolate Sales Corporation Hershey, Pa

*Description*—Milk chocolate, containing sugar, cacao butter, milk and chocolate.

*Manufacture*—The method of preparation is the same as described for Hershey's Milk Chocolate (THE JOURNAL, Feb 24, 1934, p 606)

*Analysis* (submitted by manufacturer) —

|  | per cent | Moisture- sugar<br>and fat free basis<br>per cent |
|--|----------|---|
| Moisture   | 0.5      |   |
| Ash  | 1.4      | 6.2   |
| Ash insoluble in water                                   | 1.1      |   |
| Ash insoluble in acid                                    | 0.01     |   |
| Fat (ether extract)                                      | 33.6     |   |
| Cacao fat  | 27.8     |   |
| Milk fat   | 5.8      |   |
| Total nitrogen   | 1.2      |   |
| Protein (noncaffeine and nontheobromine N $\times$ 6.25) | 7.3      |   |
| Casein   | 4.3      |   |
| Sucrose  | 46.4     |   |
| Lactose  | 7.7      |   |
| Whole milk solids (estimated)                            | 19.8     |   |
| Crude fiber  | 0.5      | 5.9   |
| Carbohydrates other than crude fiber (by difference)     | 56.8     |   |
| Theobromine  | 0.12     |   |
| Caffeine   | 0.01     |   |

\* By Prochnow's modification of the Beckurts Fromme method Arch d Pharmaz 2:47 698 1910

*Calories*—5.6 per gram 159 per ounce.

*Claims of Manufacturer*—Complies with respective United States Department of Agriculture definition and standard

**DROMEDARY BRAND GRAPEFRUIT JUICE**

*Manufacturer*—The Hills Brothers Company, New York

*Description*—Pasteurized Florida grapefruit juice, unsweetened. The method of manufacture is essentially the same as described for Dromedary Grapefruit Juice—Sugar Syrup Added (THE JOURNAL, Dec. 22 1934 p 1949) with the exception that no sugar syrup is added

# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 18, 1936

## COMPARATIVE GEOGRAPHY OF THYROTOXICOSIS

The geographic distribution of endemic goiter has been carefully charted, with resulting clarification of our concepts of the etiology. The study of thyrotoxicosis from this point of view has been comparatively neglected in the past, except for some incomplete observations. Möbius<sup>1</sup> thought that exophthalmic goiter is common in coastal regions and expressed an interest in its relation to goiter areas, though he felt that it was relatively more common in goiter free zones. Murray<sup>2</sup> reported that exophthalmic goiter is more common in the north of England than in the south and is relatively more prevalent where goiter is endemic. McCarrison<sup>3</sup> expressed the opposite view. "Graves disease is stated to be more common at the sea coast than in inland tracts, but this is an impression only and is not based on extensive statistical research. It is very rare in regions where goiter is endemic." The first extensive studies on the geographic relation of exophthalmic goiter were reported in the United States by Crotti,<sup>4</sup> who reported the incidence in 2,510,791 soldiers drafted from the entire country. In this group there were 8,647 cases of exophthalmic goiter. Crotti found that the Southern states were comparatively free from goiter but that the disease was more prevalent in the Northern states, especially in the Eastern industrial areas. He reported that exophthalmic goiter was closely associated with the distribution of simple goiter. Among the Finns, Scandinavians and Russians, simple and exophthalmic goiter were most prevalent in the order given. Darker races were found to have only a slight tendency to the disease, Negroes showed the least predisposition. McClendon and Hathaway<sup>5</sup> on statistical study, decided that thyrotoxicosis in the United States is due to iodine starvation and agreed in distribution with the zones of endemic goiter.

In 1919 Kocher<sup>6</sup> wrote that exophthalmic goiter is rare in goiter endemic zones. He further noted that thyrotoxicosis is rarer in primitive peoples than among civilized peoples. Müller<sup>7</sup> reported exophthalmic goiter quite rare in the center of the Swiss endemic zone, in southern Germany and in the goitrous regions of Holland. Feldman,<sup>8</sup> describing endemic goiter in the northern German plains, found thyrotoxicosis quite prevalent where there was endemic goiter. Vomela,<sup>9</sup> who studied thyroid disease in Moravia (in the Carpathians), found hyperthyroidism and exophthalmic goiter endemic. In the Carpathian highlands he found endemic hypothyroidism, in the plains he noted endemic hyperthyroidism. Persons who traveled from one to the other region were rapidly influenced by change of locality and developed a thyroid condition characteristic of the new location. Arndt<sup>10</sup> reported that in Russia exophthalmic goiter occurs in goiter free areas. On the contrary, Adlercreutz found that in Finland there was no typical regional distribution of thyrotoxicosis. Aschoff<sup>11</sup> studied conditions in Japan, where he found ordinary goiter rare, but exophthalmic goiter was more common, particularly among men.

It is apparent that there are conflicting views on the geographic distribution of thyrotoxicosis and its correlation with endemic goiter. For this reason Sällström's<sup>12</sup> recent detailed study of the geographic relations of thyrotoxicosis in Sweden is an important contribution toward a better understanding of this problem. This monograph is based on a thorough statistical study of 5,450 thyrotoxic patients admitted to Swedish hospitals in the period 1925-1932. There were 4,950 women and 500 men in this series. Thyrotoxicosis occurred at all ages from 9 months to 70 years, though it was most prevalent in the third decade. In 67 per cent of these patients goiter had been present more than ten years without symptoms. In general there was a greater incidence of thyrotoxicosis in urban than in rural communities. A specific localization was found for nodular toxic goiter, which did not agree with the distribution of endemic goiter or with that of thyrotoxicosis. Severe thyrotoxicosis with exophthalmos showed a higher incidence in regions with slight goiter tendencies. On the contrary severe thyrotoxicosis without exophthalmos was found to be distributed uniformly over the entire country. In endemic goiter zones, thyrotoxicosis occurred in mild form. In Kopparberg, which has the greatest amount of goiter in Sweden, there was only a slight incidence of thyrotoxicosis. Värmland, where

6 Kocher, Albert in Kraus, Friedrich, and Brugsch, Theodor. *Spezielle Pathologie und Therapie*. Berlin and Vienna: Urban & Schwarzenberg, 11:182, 1927.

7 Müller, F. *Zur pathologische Physiologie der Schilddrüse*. *Ber. Internat. Kropf. Kongr.* in Bern, 1927, p. 221.

8 Feldman, E. *Der endemische Kropf der Norddeutschen Tiefebene*. *Ber. Internat. Kropf. Kongr.* in Bern, 1927, p. 90.

9 Vomela, S. *Sur le goitre exophthalmique endémique*. *Ann. de med.* 32:461, 1932.

10 Arndt, H. J. *Der Kropf in Russland*. *Vorläufige d. Gewerbe u. Konst. Path.* 7, 1931.

11 Aschoff, L. *Zur Kropf Frage in Japan*. *Virchows Arch. f. path. Anat.* 254:841, 1925.

12 Sällström, T. *Vorkommen und Verbreitung der Thyrotoxicosis in Schweden*. Stockholm, 1935.

1 Möbius, P. F. *Basedow Krankheit* in Nothnagel's Handbuch 1896 quoted by Sällström.<sup>12</sup>

2 Murray quoted by Sällström.<sup>12</sup>

3 McCarrison, Robert. *The Thyroid Gland in Health and Disease*. London: Baillière Tindall & Cox, 1917, p. 195.

4 Crotti, André. *Thyroid and Thymsus*. Lea & Febiger, 1922, p. 245.

5 McClendon, J. F. and Hathaway, J. C. *Inverse Relation Between Iodine in Food and Drink and Goiter: Simple and Exophthalmic*. *J. A. M. A.* 82:1668 (May 24) 1924.

there is a slight incidence of struma, has much thyrotoxicosis. On the coast of Norway there is no agreement in distribution of struma and thyrotoxicosis. Secondary thyrotoxicosis, as might be expected, occurred most frequently in regions with a high goiter incidence, while exophthalmic goiter was more prevalent in goiter poor areas. These contradictory reports of various investigators indicate that there are unknown factors in the pathogenesis of the different types of thyrotoxicosis. Sällström has suggested three possibilities in the correlation of thyrotoxicosis and endemic goiter in Sweden: that struma and thyrotoxicosis have the same distribution, that thyrotoxicosis is more common in goiter free areas, and that secondary hyperthyroidism is more prevalent in goiter areas. In relation to simple goiter, thyrotoxicosis is a comparatively rare disease, which occurs ten times more frequently in females than in males. Sällström has justly criticized Crotti's studies by pointing out that the latter considered only males. Could he have included an equally comprehensive study of thyrotoxicosis in women, Crotti probably would not have found such a simple agreement in distribution of simple goiter and thyrotoxicosis.

Among exogenous factors of a geographic nature, climate is significant in relation to its influence on thyrotoxicosis. Doche<sup>13</sup> reported that a maritime climate stimulates the endocrine glands, particularly the thyroid. Rowinski<sup>14</sup> thought that sea climate causes a hyperthyroid state particularly in patients with struma, presumably owing to the metabolic stimulation induced by iodine in the air at the sea coast. The seasons also have an effect on thyroid function. The highest blood iodine values occur in midsummer (June to August). In the observations of Sällström, no relation was noted between the radioactivity of the water and the incidence of thyrotoxicosis. A definite tendency was observed for the development of thyrotoxicosis in agglomerations of people about the industrial zones. In western Sweden the incidence of thyrotoxicosis was slight, whereas in eastern Sweden there was a relatively high incidence. It was observed in these studies that thyrotoxicosis is more prevalent in areas of a continental climate than in areas with a maritime climate. This is corroborated by Crotti's report that thyrotoxicosis is more prevalent in the Northern states, which have a continental type of climate, than in the Southern and Eastern states where a maritime climate prevails. The relative richness of iodine in a maritime zone and its comparative scarcity in a continental region may help to explain this peculiarity in distribution.

The study of the comparative geographic distribution of a disease is rendered obscure because of the very multiplicity of factors included, such as climate, geographic locality, season, local water supply, meteorological

conditions such as temperature and humidity as well as the variations in physical constitution of different human stocks living in various regions. Since any or all of these factors may exert an influence on the pathogenesis of thyrotoxicosis, it is suggested that future studies in this field be limited to the effect of one or another geographic factor with relation to a definite type of thyrotoxicosis in one type of human stock, if possible. In conclusion, it is of interest that Sällström observed no correlation between the incidence of thyrotoxicosis and endemic goiter. There was noted a greater incidence of struma in families with thyrotoxicosis than in the general population affected with struma. This indicates the importance of a constitutional predisposition.

### PROTAMINE INSULINATE

One of the major difficulties of endocrine substitution therapy is the duplication of the effects of continuous secretion by intermittent administration. The consequences of underdosage and overdosage are particularly rapid and striking with insulin; this problem is therefore most important in the treatment of diabetes. While the majority of patients are able to adjust their carbohydrate metabolism satisfactorily by the injection of insulin several times a day, many patients with diabetes have so delicately balanced an equilibrium that it is readily disorganized by slight overdosage or underdosage of insulin; wide fluctuations in blood sugar occur in these patients. The solution of this problem seems to lie in devising either a new method of administration or a new form of insulin which, when injected, would more nearly approximate the natural continuous secretion of this substance. A number of attempts have been made to solve this problem, none entirely successful. Important progress in this direction has now been made by Hagedorn and his collaborators at the Steno Memorial Hospital in Copenhagen; their communication and a confirmatory article by Root and his associates of Boston appear elsewhere in this issue.<sup>1</sup> The Danish investigators have combined insulin with protamines (elementary compounds of amino acids containing one or more of the substances lysine, arginine and histidine). These new insulin compounds have an iso-electric point ( $p_H$  of minimum solubility) approaching the  $p_H$  of body tissues. Injected protamine insulinate, being relatively insoluble, tends to be absorbed slowly and over a relatively longer time than ordinary insulin; the blood sugar lowering effect lasts about twice as long. Patients with severe diabetes have been enabled to avoid to a large extent the marked fluctuations in blood sugar and hence the insulin reactions that sometimes characterize treatment with insulin alone.

13 Doche J. De l'influence du climat marin sur les secretions internes. *Rev. gen. de clin. et de therap.* 26:261 1912.

14 Rowinski P. Influenza del clima marino e dei bagni di mare sul ricambio basale. *Minerva med.* 2:79 1931.

1 Hagedorn H. C. Jensen B. N. Krarup N. B. and Wodstrup I. Protamine Insulinate, this issue p. 177. Root H. F. White Prinsella Marble Alexander and Stotz E. H. Clinical Experience with Protamine Insulinate p. 180.

Protamine insulinate (insulin retard) opens the door for fresh studies in the treatment of diabetes. With it the blood sugar can be kept more nearly normal and any advantages that can occur from this fact ought to show within a few years. Already it is known that the diabetic patient who is carefully treated is the one who lives longest and is most free from complications. Can the diabetic patient with blood sugar controlled throughout the twenty-four hours do better still? The new insulin in its present form demands more intelligence in its use, it works too slowly for coma and too slowly to overcome the hyperglycemia of a large meal, and it has the disadvantage of not being stable for more than a few weeks. When properly employed it will replace the customary high fasting blood sugar of the diabetic patient with a normal blood sugar. Perhaps the wise patient with diabetes will employ the quickly acting old insulin in the morning with a heavy breakfast and the slowly acting new insulin at night before a light dinner, as Dr. Hagedorn's patients have done.

This undoubtedly represents an important advance in the treatment of diabetes, it should be emphasized, however, that protamine insulinate is still a laboratory preparation and is not yet commercially available in this country. The compound must be prepared shortly before use, as it is stable at most for only a few weeks. It does not supplant ordinary insulin but serves as an adjunct to the latter, the two must usually be used in the same patient at different times of the day. Hagedorn and his associates point out that protamine insulinate is of no special value in those patients who are now adequately treated with insulin. But for those patients whose diabetes cannot be controlled satisfactorily with insulin alone, protamine insulinate is a valuable contribution—indeed the most valuable since the original discovery of insulin by the Toronto group.

#### PIGMENTATION, SUNLIGHT AND NUTRITION

The deeply pigmented races, such as the Negroes and certain brown races, are concentrated in the tropical regions, while the less deeply pigmented and white races "live native" only in the temperate zones. Dark races do not thrive in colder climates and the successful colonization of white races in the tropics has not yet been accomplished.

A number of hypotheses have been proposed to explain the phenomenon of racial distribution. One of these, which has been discussed recently,<sup>1</sup> places emphasis on the importance of sunlight as related to nutrition, specifically vitamin D. The deeply pigmented race, it is pointed out, is limited chiefly to the equatorial zone because, on migrating toward the poles where the amount and physiologic activity of sunlight progressively decrease, the skin pigment unduly lessens the amount of vitamin D normally produced in the organ-

ism by the solar radiation of sterols. As a result, rickets and deformities of the bones appear. The peculiar susceptibility of Negro babies in this country to rickets is a familiar example. In time, bone malformation also includes the pelvis of the female, thus interfering with reproduction. Eventually the race must become extinct unless there is a remigration to a more sunny region, a compensatory decrease in the amount of skin pigmentation, or the inclusion in the diet of substances especially rich in vitamin D. Apparently, the ability of the pigmented Eskimo to exist in the polar regions is due to the latter type of compensation in the form of ingestion of the livers and certain other organs rich in vitamin D from fish and other food animals.

The question of the inability of the white race to inhabit successfully the equatorial zone is perhaps more difficult to explain on a nutritional basis despite the fact that the dominance of the pigmented races in the tropics is more striking than that of the fair races in colder regions. It has been stated<sup>1</sup> that a nutritional disease factor related to the excessive sunlight may be involved and that this may give rise to the neurasthenias so frequently observed in white inhabitants of the tropics. Or it is possible that toxic effects from photosensitization to some substance may be involved. Whatever may be the ultimate explanation, the pigment of the skin appears to serve in some way as a protective device without which the continued propagation of a race is not possible in regions of excessive sunlight.

### Current Comment

#### ALUMINUM IN FOOD

Propaganda as to possible dangers resulting from the use of aluminum cooking vessels is so persistent that one suspects ulterior motives in its background. The problem has been investigated at various times, and in the presence of a renewed criticism of the widespread employment of aluminum vessels another recent study of the subject has appeared under the auspices of the British Ministry of Health.<sup>1</sup> The accurate determination of aluminum in food and biologic material, according to Monier-Williams, who wrote the report, is a difficult matter. The amount usually present is small and cannot easily be separated completely from iron and other metals. The method that has finally been adopted depends on the precipitation by 8-hydroxyquinoline and although considerably longer than some of the colorimetric methods, has the advantages that it is applicable over a wide range of aluminum content and that the aluminum is obtained in a form in which it can be weighed or titrated. The figures for the amount of metal taken up by food from aluminum vessels vary considerably, owing to different conditions of experiment. Distilled water, whether hot or cold, has almost no action. Hard waters, however, corrode aluminum.

<sup>1</sup> Murray F. G. Pigmentation, Sunlight and Nutritional Disease. *American Anthropologist* 36: 438 (July-Sept.) 1934.

<sup>1</sup> Monier-Williams G. W. Aluminum in Food. Report 78 on Public Health and Medical Subjects. London: Ministry of Health 1935.



slightly and the same is true of organic acids. Aluminum is readily acted on by alkalis, and cooking utensils are therefore liable to be damaged if cleaned too often with soda. The problem of whether or not aluminum is injurious in moderate doses involves a number of different questions. It is probable that a considerable proportion taken into the stomach is soluble. Whether it can diffuse through the walls of the intestinal tract and get into the blood is a matter of further controversy, and at present judgment on this matter must be suspended. Aluminum salts in doses that are not unreasonably high have been shown to have some action on digestive processes. There is no convincing evidence, however, that aluminum in the amounts in which it is likely to be consumed as a result of the use of aluminum utensils has a harmful effect on the ordinary consumer.

## Association News

### THE KANSAS CITY SESSION

#### Applications for Space in the Scientific Exhibit

Attention is called to the fact that applications for space in the Scientific Exhibit at the Kansas City Session close on January 27. The Committee on Scientific Exhibit requires that all applications be made out on the regulation blanks.

Information and application blanks may be obtained from the Director, Scientific Exhibit, American Medical Association, 535 North Dearborn Street, Chicago.

### APPOINTMENT

Dr P. A. Teschner of Milwaukee has been appointed assistant director of the American Medical Association Bureau of Health and Public Instruction. This is a newly created position to take care of the expanding work of the Bureau. Dr Teschner is a native of Wisconsin. He is a member of the Milwaukee County Medical Society and the State Medical Society of Wisconsin. He has been serving since 1926 as a member of the medical staff of the Wisconsin Anti Tuberculosis Association.

### RADIO BROADCASTS

The American Medical Association broadcasts over WEAf, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers a toast: "Ladies and gentlemen your health!" The theme of the program is repeated each week in the opening announcement which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

**Red Network**—The stations on the Red network of the National Broadcasting Company are WEAf, WEEf, WTIC, WJAR, WTAG, WCSH, KIW, WFBR, WRC, WGY, WBN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

**Pacific Network**—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

January 21 Scarlet Fever Morris Fishbein M.D.  
January 28 Health of the Traveler W. W. Bauer M.D.  
February 4 Pneumonia W. W. Bauer M.D.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### ARKANSAS

**First Conference of State Secretaries**—The first annual conference of secretaries of Arkansas county medical societies was held at the Hotel Marion, Little Rock, January 6. In addition to talks by Drs. Melvin E. McCaskill, president of the state medical society, and Lee V. Parmley, chairman of the legislative committee, the following program was presented:

Dr. Darmon A. Rhinehart, Little Rock, Value of a Public Relations Committee in a County Medical Society.  
Dr. Rufus B. Robins, Camden, Arranging the County Society Program.  
Dr. Albert B. Dickey, Prescott, How the Arkansas Medical Society May Help the County Societies.  
Drs. Flen D. Smith, Blytheville, and Jordan L. Roberts, Nashville, This Matter of Collecting Dues.  
Dr. Gaston A. Hebert, Hot Springs National Park, Social Gathering of the County Medical Society.  
Dr. Arthur M. Gibbs, Hamburg, Value of Combining County Medical Societies for Scientific Programs.

Dr. Olin West, Secretary and General Manager, American Medical Association, Chicago, addressed the meeting.

**Society News**—At a meeting of the Eighth Council District Medical Society, Little Rock, December 4, the speakers included, among others, Drs. Dewell Gann Jr., on "Surgery As an Art", Francis W. Carruthers, "Diagnosis and Treatment of Vascular Diseases of the Extremities," and Darmon A. Rhinehart, "X-Ray Treatment of Epithelioma of the Skin." The morning was given over to clinics.—Dr. John M. Smith, Russellville, addressed the Faulkner County Medical Society, November 21, on "Surgery of Abdominal Tumors."—Drs. Roland H. Klemme and Benjamin F. Turner, St. Louis and Memphis, discussed head and birth injuries, respectively, before the Craighead-Poinsett County Medical Society in Jonesboro, December 12.—Dr. C. J. Fishman, Oklahoma City, addressed the Sebastian County Medical Society, December 10, on "Uses and Abuses of Roentgenology in Internal Medicine."—At a meeting of the White County Medical Society, December 5, Dr. Wallace R. Richardson, Little Rock, spoke on intestinal obstruction.—Dr. John S. Wilson, Monticello, led a symposium on the common cold before the Southeast Arkansas Medical Society in Monticello, December 16.

### CALIFORNIA

**Poliomyelitis Vaccines Prohibited**—The use of vaccines or other similar immunizing agents to protect human beings against acute anterior poliomyelitis is prohibited in the city and county of San Francisco by an order issued by the director of public health, Dr. Jacob C. Geiger, December 27. In the order, Dr. Geiger stated that he believed the action was indicated and appropriate as a public health measure directed at the control of a communicable disease, particularly because recent evidence supports the premise that acute anterior poliomyelitis occurs with a greater frequency in those "immunized" than in those not "immunized" in comparable population age groups under comparable conditions.

**In Commemoration of Dr. Crummer**—A room containing historical material has been set aside at the University of California Medical School in honor of the late Dr. Leroy Crummer, Los Angeles, who inaugurated systematic instruction in medical history in the school. The exhibit includes Dr. Crummer's library and donations by physicians. A field medical kit used during the Franco-Prussian war, a set of instruments used by Dr. Beverly Cole, one of the founders of the medical school and two microscopes dating from the seventeenth century are among the surgical devices shown. The oldest book in the collection is a Gerson of 1472, one of the earliest medical classics. Dr. Crummer, who died in 1934, was clinical professor of medical history and bibliography at the medical school and professor of the history of medicine, University of Southern California School of Medicine.

### COLORADO

**Health at Denver**—Telegraphic reports to the U. S. Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended January 4, indicate that the highest mortality rate (29.9) appears for Denver and the rate for the group of cities as a whole, 13.8. The mortality rate for Denver for the corresponding period last year was 17 and for the group of cities, 13.5. Caution should

be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or that they have a large Negro population may tend to increase the death rate.

### DELAWARE

**Society News**—Dr Julian Johnson, Philadelphia, addressed the New Castle County Medical Society, recently, in Wilmington, on "Management of Diseases of the Thyroid Gland." Dr Alexander Randall, Philadelphia, discussed the diagnosis and treatment of urinary calculus before the society, recently.

### DISTRICT OF COLUMBIA

**University News**—Dr Thomas M. Rivers of the Rockefeller Institute for Medical Research, New York, gave the third lecture in the Smith-Reed-Russell series at the George Washington University School of Medicine, December 10, on "Filterable Virus Diseases of the Central Nervous System."

**Medical Bills in Congress**—*Change in Status* S 3284 has been reported to the Senate with the recommendation that it pass, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue, without examination, a license to practice the healing art to Dr Dexter P. Reynolds (S Rept No 1464). *Bills Introduced* S 3513, introduced by Senator King, Utah, and H. R. 9279, introduced (by request) by Representative Norton, New Jersey, propose to regulate the sale, in the District of Columbia, of barbitol or any other hypnotic or somnifacient drug. S 3514, introduced by Senator King, Utah, and H. R. 9278, introduced (by request) by Representative Norton, New Jersey, propose to regulate, in the District of Columbia, the manufacturing, dispensing, selling and possession of narcotic drugs. While these bills purport to enact the "uniform narcotic drug act," they vary in important details from the model uniform state narcotic act formulated by the National Conference of Commissioners on Uniform State Laws, and approved by the American Bar Association and the American Medical Association. The pending bills define "physician" specifically to include an osteopath and a "hospital" to include "dental and medical clinics." They bring within their terms apomorphine, specifically excluded from the model bill. The sections in the bills dealing with exempt preparations may facilitate the abuse of the use of such preparations. The bills deny to the courts any jurisdiction to revoke the license of convicted persons, and the enforcement provision may make uncertain adequate enforcement.

### ILLINOIS

**Health Promotion Week**—The Illinois State Department of Health announces that Health Promotion Week will be observed April 26-May 1.

**Smallpox in the Suburbs**—With several cases of smallpox under quarantine, health officials of Maywood, Melrose Park, Bellwood and Forest Park are cooperating in an immunization campaign. Sixteen cases were reported in Maywood, January 9, sixteen in Bellwood and three each in Forest Park and Melrose Park. While schools are not to be closed, health officials are advising the exclusion of unvaccinated children from school for sixteen days. Some factories in Maywood have arranged for vaccination of their employees.

**Society News**—At a meeting of the Sangamon County Medical Society in Springfield January 2, Dr Herbert B. Henkel discussed "Symptoms and Diagnosis of Common Urologic Conditions." Emmet F. Pearson, Minor and Borderline Manifestations of Allergy, and Herman H. Tuttle, present-day health problems. Dr Arthur E. Hertzler, Halstead, Kan., discussed "Benign Diseases of the Stomach" before the Peoria City Medical Society, January 7. Dr Archibald L. Hoyne, Chicago, discussed "Newer Methods of Prophylaxis and Treatment in Contagious Diseases" before the Winnebago County Medical Society in Rockford, December 20. Dr Eugene F. Traut, Chicago, discussed "Etiology and Treatment of Arthritis" before the DuPage County Medical Society in Elmhurst, December 18.

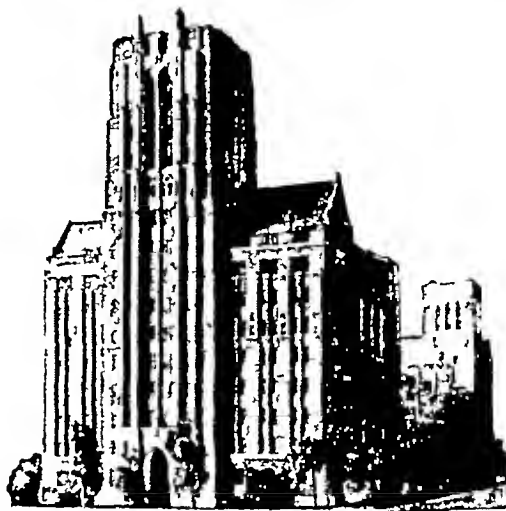
### Chicago

**Hobby Exhibit**—The program committee of the Chicago Medical Society has designated the evening of April 1 doctors' recreation night. Physicians are urged to submit samples of their hobbies for an exhibit.

**Reward for Capture of Physician's Slayer**—The North Shore branch of the Chicago Medical Society offered a reward, January 10, for the capture and conviction of the person or persons who murdered Dr Silber C. Peacock, January 2. Dr Peacock was lured from his home by a telephone call to visit a sick child.

**Society News**—Dr Peter Bassoe was chosen president of the Institute of Medicine of Chicago at the recent annual meeting. Harold F. McCormick and Albert A. Sprague were elected to citizen fellowship, an honor conferred on laymen who have contributed materially to the welfare of the community in medicine, dentistry, nursing, public health, social service or instruction. At a meeting of the Chicago Gynecological Society, January 17, speakers included Drs William J. Dieckmann and Howard J. Holloway on "Acute Nephritis and Pregnancy" and "Cervicitis and Endocervicitis in Relation to Gynecologic Symptomatology," respectively. Dr Isaac A. Abt addressed the Chicago Heart Association, January 7, on "Heart Disease in Early Life." Dr Harry A. Paskind presented a paper before the Society of Medical History of Chicago, January 17, entitled "Sir Charles Bell: A Biographical Sketch," and Dr Clarence A. Earle, one on "Dr John Zahn, Pioneer German-American Physician."

**New Building at University of Illinois**—Contracts have been let for new Medical and Dental Research Laboratories of the University of Illinois College of Medicine, which will be erected with funds provided in a federal grant of \$1,220,000, 30 per cent of which is a gift and 70 per cent of which is a loan to be repaid in annual instalments. The structure will be nine stories high, with a tower 57 feet square rising fifteen stories. The architecture will be gothic with brick exterior.



Proposed Medical and Dental Research Laboratories

The new unit will contain the departments of public health, bacteriology and pathology of the college of medicine and will provide additional research space for other departments. The college of dentistry also will be in the new building.

### IOWA

**Society News**—A symposium on nonspecific ulcerative colitis was presented at the meeting of the Des Moines Academy of Medicine and the Polk County Medical Society, December 17, with Drs Lee E. Rosebrook, Conan J. Peisen and Nevin Boyd Anderson as the speakers. Dr Harry E. Klein, New York, discussed tuberculosis before the meeting, November 26, and Dr Arthur W. Erskine, Cedar Rapids, reviewed a tuberculosis survey in Linn County. Dr Edward A. Schumann, Philadelphia, will present a paper before the Linn County Medical Society, February 6, in Cedar Rapids.

### KENTUCKY

**Summary of Poliomyelitis Epidemic**—From Jan. 1 to Nov. 1, 1935, the state board of health recorded 308 cases of poliomyelitis in Kentucky, the period of greatest prevalence being from July to November. Twenty-five deaths occurred, a fatality rate of 8.3. The age group in which most cases occurred was that of children under 5 years, 137. Seventeen deaths were in this group. Fourteen cases were in adults, with no deaths. About 67 per cent of those who recovered showed some degree of paralysis. The highest incidence was in Louisville and Jefferson County and in a group of counties south west of Louisville including Bullitt, Nelson, Hart, Barren, Edmondson, Grayson, Breckenridge, Warren, Logan, Muhlenberg, Hopkins and Daviess counties.

## MARYLAND

**Dr Clark Awarded Chemists' Medal**—William Mansfield Clark, Ph D, professor of physiological chemistry, Johns Hopkins University School of Medicine, Baltimore, has been awarded the William H Nichols Medal of the New York section of the American Chemical Society for 1936, "for researches of incalculable value to human welfare. The medal will be presented to Dr Clark at a dinner meeting of the New York section, March 6, with Donald D Van Slyke, Ph D, of the Rockefeller Institute and Albert Baird Hastings, Ph D, Harvard Medical School, Boston, as the speakers. Prof Arthur W Hixson of Columbia University, chairman of the jury of award, will deliver the annual Nichols Medal address. Dr Clark received his degree of doctor of philosophy from Johns Hopkins in 1910. He was research chemist with the dairy division of the U S Department of Agriculture from 1910 to 1920 and for several years chief of the division of Chemistry at the Hygienic Laboratory, U S Public Health Service. In 1927 he became DeLamar professor of physiological chemistry at Johns Hopkins University School of Medicine. His work has dealt with metabolism of bacteria, chemistry of milk and cheese, acid base and oxidation-reduction equilibria, and determination of hydrogen ions. In 1933 he was president of the Society of American Bacteriologists and the American Society of Biological Chemists.

## MASSACHUSETTS

**Society News**—Speakers before the Worcester District Medical Society in Worcester, January 8, were Drs Benjamin T Burley, on "Head Injuries—Types and Treatment", Philip H Cook, "Roentgen Diagnosis of the Abdominal Aorta," and Foster L Vibber, "Treatment of Epileptics and Their Relatives."—Dr John A Kolmer, Philadelphia, discussed "Infection, Immunity and Vaccination in Infantile Paralysis" before the staff of St. Elizabeth's Hospital, Boston, January 3.—At a meeting of the New England Heart Association in Boston, January 6, Dr Maurice E A Schnitzer, among others, spoke on the question "Is Digitalis Present in Body Fluids in Digitalized Patients?"

**Pneumonia Study Completed**—A four-year study of pneumonia in Massachusetts was recently terminated. The results of the study have been incorporated in a handbook on the serum treatment of pneumonia now being prepared for publication by the Commonwealth Fund. Because the study showed physicians in general practice to be capable of obtaining satisfactory results from serum treatment of early type I and type II cases of pneumonia, the state department of public health has now taken over the cost of producing typing and therapeutic serums and is distributing them without charge to sixty cooperating laboratories in the state. The laboratories then distribute the serum without charge to physicians for patients who have been ill not longer than four days. The serum is a concentrated antipneumococcus serum, also known as Felton's antibody solution. In the Massachusetts study the fatality rate among persons with type I pneumonia treated with the serum was 10.1, while the rate for those treated without serum was 24.4. For patients with type II pneumonia treated with the serum the fatality rate was 26, while those receiving no serum showed a rate of 40.3. The death rate was found to be the lowest in cases in which treatment with serum was begun within the first seventy-two hours of illness. About four fifths of the patients were treated in hospitals and one fifth in their homes. The study was begun in 1931 with an annual grant for three years of \$36,200 from the Commonwealth Fund and later extended for another year. Various laboratories in the state were chosen as pneumonia type determination stations and their technicians were trained at the expense of the study fund. A special advisory committee supervised the work, with Dr Roderick Heffron as director (THE JOURNAL Oct 17, 1931 p 1156, March 3, 1934 p 704).

## MICHIGAN

**Dinner to Dr Parmeter**—Dr Rolland Parmeter, Detroit, was honored at a surprise dinner December 4 given by members of the staff of Harper Hospital celebrating his birthday and the completion of twenty-five years service on the surgical staff of the hospital. Speakers included Drs Thomas R. Gruber, Eloise George Kamperman, Angus McLean, John Donald Mabley, Bror Hjalmar Larsson and Clark D Brooks. Dr Louis J Hirschman acted as toastmaster.

**Personal**—Dr Angus McLean was honored with a testimonial dinner January 9 given by the Detroit Academy of Surgery. Speakers were Drs Raymond C Andries and Wyman D Barrett, who reviewed fifty years of surgical practice from a scientific and practical standpoint respectively. Dr McLean

was the first president of the academy.—Dr Abbott B Mitchell, for the past four years head of the Allegan County health unit under the W K Kellogg Foundation, has resigned to become a member of the bureau of epidemiology of the state board of health.

**County Secretaries' Conference**—The annual county secretaries' conference of the Michigan State Medical Society will be held at the Olds Hotel, Lansing, January 26. Dr Earl I Carr, president of the Ingham County Medical Society, will deliver the address of welcome. Speakers on the program will include:

Dr Grover C Penberthy, The State Society's Five Year Program  
Dr Louis Fernald Foster, Bay City Integration  
Dr Howard H Cummings, Ann Arbor, Do the People of Michigan Want a Guarantee for Good Medical Service?  
Dr Clyde C Slemons, Grand Rapids, The Michigan Department of Health, the Social Security Act and the County Health Unit.  
Dr Henry Cook Flint, The Business of the Michigan State Medical Society.

There will also be a round table discussion covering medical care of the indigent. Dr Roscoe L Sensenich, South Bend, president, Indiana State Medical Association, will address the dinner meeting on the socialization of medicine and the American Medical Association.

## MINNESOTA

**Society News**—Dr Sumner L S Koch, Chicago, discussed "The Immediate and Late Treatment of Injuries of the Hand" before the Hennepin County Medical Society, Minneapolis, January 6, and Elias P Lyon, LL D, Minneapolis, January 8, "Impressions of Russian Science and Medicine."—Dr Herbert M Evans, Berkeley, Calif, gave a lecture at the Mayo Foundation, Rochester, January 13, entitled "Gonadotropic Function of the Pituitary."

**Ginsberg Sentenced for Practicing Without License**—Hyman Ginsberg, alias Dr Robert Clark alias Dr Hy Burgh, was convicted, July 11, 1935, of practicing healing without a basic science certificate and recently sentenced to a straight workhouse term of ten months. For some time Ginsberg had operated a barber shop at 125 Oak Grove, Minneapolis. A girl testified that Ginsberg made an examination, punctured her ear with a needle and obtained a specimen of blood allegedly to determine the condition of her health; she testified also that the defendant furnished her with capsules to treat her blood condition and gave her a hypodermic injection in the arm. The investigation disclosed that Ginsberg had repeatedly told patrons of his shop that he had studied medicine, and twenty prescriptions furnished by him were found in a drugstore in Minneapolis. Thirteen of these prescriptions were hand written and seven were telephoned. The name given in each case was "Dr Bergman." Ginsberg admitted that in March 1932 he pleaded guilty in the district court of Hennepin county to having performed an abortion. This is the longest straight jail sentence ever imposed in Minnesota for violation of the basic science law, the state board reported.

## MISSOURI

**Society News**—At a meeting of the Kansas City Pathological Society, December 17, speakers included Dr Ferdinand C Helwig on "Sarcoma of the Spleen."—The Kansas City Southwestern Pediatric Society was addressed, December 12, by Drs Paul E Belknap, Topeka, on "Undulant Fever", Urban J Busiek, Springfield, "Appendicitis in Children," and Milo G Sloo, Topeka, "Acrodynia."—The Buchanan County Medical Society was addressed by Dr Samuel J Freund, St. Joseph, recently on "Diagnosis and Treatment of Meningitis."—At a meeting of the Cape Girardeau County Medical Society in Cape Girardeau, recently, Dr Walter W Ford, Gordonville, read a paper on "Diagnosis and Treatment of Typhoid Fever."—Speakers before the Jefferson County Medical Society in Crystal City, recently, were Drs Joseph P Costello and Julius A Rossen, St. Louis, on "Pneumonia in Children" and "Lung Conditions Resulting from Upper Respiratory Infections."—Dr Eugene P Hamilton, Kansas City, discussed "Diagnosis of Acute Perforations of the Abdominal Viscera" before the Pettis County Medical Society, recently, in Sedalia.—The Randolph-Monroe County Medical Society was addressed, recently, in Moberly, by Dr Garvey B Bowers, Moberly, on food allergy.—Dr Robert Vinvard, Springfield, was recently elected president of the Grisco System Medical Association.—At a joint meeting of the Jackson and Wyandotte county medical societies with the Kansas City Southwest Clinical Society, January 14, Dr Peter T Bohan spoke on "Tobacco and Alcohol—Their Effects on the Human Body," and Dr Cecil G Leitch, "Sudden Death from Heart Disease."—Dr John B Deime discussed "Bilateral Pneumothorax" before the St. Louis Trudeau Club, January 9.

## NEW YORK

**Society News**—Dr Francis G. Blake, New Haven, Conn., will address the Medical Society of the County of Westchester, White Plains, January 21, on "Diagnosis and Treatment of Respiratory Diseases."—Dr Bret Ratner, New York, addressed the Putnam County Medical Society, Carmel, January 8, on "Nature and Management of Allergy in Childhood."—A program on pneumonia was presented before the Onondaga Medical Society, Syracuse, January 7, by Drs Edward S. Rogers, Albany, director of the state campaign for pneumonia control, who discussed "Organization and Activities for Pneumonia Control," Orren D. Chapman, Syracuse "Bacteriology of Pneumonia," and Russell L. Cecil, New York, "Diagnosis and Treatment."

## New York City

**Prison Demolished to Make Way for Hospital**—Razing of the city penitentiary on Welfare Island was to be started during the last week of December to make way for the construction of a center for the study and treatment of chronic disease, the *New York Times* announced, December 21. Federal funds have been obtained for a nurses' home and a power plant, which will be started as soon as the demolition has progressed far enough. A 1,500 bed hospital is planned, but funds have not been assured.

**Conference on Social Hygiene**—A regional conference on social hygiene was held under the auspices of the Social Hygiene Council of Greater New York, January 15, at the Hotel Pennsylvania. Among topics on the program were "The Toll of Gonorrhea," discussed by Drs Emily D. Barringer, Shirley W. Wynne and William Bierman, New York, and Stanhope Bayne-Jones, New Haven, Conn., "Control of Syphilis and Gonorrhea in Europe," discussed by Drs Charles Walter Clarke, David J. Kaliski and William Bayard Long, and "Congenital Syphilis in New York City," discussed by Drs Alfred Potter, Jessie L. B. Marshall and Thurman B. Givan.

**Dr Park Retires**—Dr William Hallock Park, for forty-two years director of the bureau of laboratories of the New York Department of Health, retired from active service on his seventy-second birthday, December 30. Under a special arrangement approved by the mayor, Dr Park will take a six months vacation, at the end of which the new William H. Park Research Laboratories will be dedicated in his honor and he will become director emeritus. When Dr Park reached the retirement age two years ago his service was extended for two years. Dr Ralph S. Muckenfuss, acting associate director, will be in charge of the laboratories.

**Society News**—The New York Diabetes Association will meet with the section on medicine of the New York Academy of Medicine, January 21, to hear a symposium on "The Significance of Blood Sugar." Speakers will be Drs Stanhope Bayne-Jones, New Haven, Conn., Harold E. Hunwich, Albany, and Edward Tolstoi, New York.—The German Medical Society of New York celebrated its seventy-fifth anniversary at a dinner at the Hotel Astor, January 16.—Drs Walter Freeman, Washington, D. C., and Abraham Myerson, Boston, addressed the New York Neurological Society, January 14 on "Ventriculography with Colloidal Thorium Dioxide" and "Visualization of the Cerebral Vessels by Direct Intracarotid Injection of Thorium Dioxide," respectively.—Drs Harold Neuhoef and Arthur S. W. Touroff addressed the New York Surgical Society, January 8, on "Acute Putrid Abscess of the Lung."—Dr Morris Fishbein, Chicago, editor of *THE JOURNAL*, will address the Medical Society of the County of Queens, January 28, on "Medicine in the Changing World," and Drs Frederick E. Elliott and Vincent de Paul Juster will discuss medical economics. Dr Howard Fox gave a Friday afternoon lecture, January 3, on diagnosis and treatment of common skin diseases, and Dr Bret Ratner, January 17, on "Pathogenesis and Basic Principles of Treatments in Allergy of Childhood."—Dr Harry Wessler, chief of the tuberculosis service, Montefiore Hospital, gave the main address at a clinical session of the Tuberculosis Sanatorium Conference of Metropolitan New York, December 11, on "Psychogenetic Factors in Tuberculosis."

## OHIO

**Personal**—Dr Emma J. Betow, for many years a missionary in China, has retired from active service and will make her home in Clyde, it is reported.—Dr Francis Edgar Mahla, Marion, has been appointed assistant state director of health, succeeding Mr. James E. Bauman, who had held the position forty-three years.—Dr Edwin P. Kennedy, Cleveland received first prize in a contest for prose writing conducted recently by

the Cleveland Academy of Medicine. Dr Kennedy's contribution was an essay entitled "Musical Appreciation in Embryo."

**Public Lectures on Health**—The Albert Fairchild Holden Foundation of Western Reserve University and the Academy of Medicine of Cleveland have announced the sixth annual series of free public health lectures to be given at the Allen Memorial Medical Library Auditorium. Following is the series:

Dr Charles W. Stone, associate clinical professor of nervous diseases, Western Reserve University School of Medicine, January 19, Mental Hygiene and Crime.  
Dr Harry V. Paryzek, director of medicine, St. Alexis Hospital, February 2, High Blood Pressure.  
Dr Frank M. Casto, dean, Western Reserve University School of Dentistry, February 16, The Relation of Teeth to Health and Appearance.  
Dr Clarence H. Heyman, senior clinical instructor in orthopedic surgery, Western Reserve University School of Medicine, March 1, The Crippled Child.

## OKLAHOMA

**Meningitis Closes Schools**—Schools, theaters and other public gathering places were closed January 10, in Vinita because of meningitis in the community. A battery of soldiers at Fort Sill was quarantined, December 27, when a case appeared in the post. According to an Associated Press report, January 11, twenty-eight deaths had occurred in the state since December 5.

## PENNSYLVANIA

**Society News**—Drs George M. Piersol, Philadelphia, and Walter F. Donaldson, Pittsburgh, secretary, Medical Society of the State of Pennsylvania, addressed the Lycoming County Medical Society at its annual meeting, January 10, in Williamsport on "Coronary Artery Disease" and "The Physician as a Neighbor," respectively. Rev. James Corbett made an address at the banquet on "The Pros and Cons of the Socialization of Medicine."—Dr Roger P. Batchelor, Palmerton, addressed the Carbon County Medical Society, Palmerton, December 19, on "Direct Surgical Relief of Pain."—The Northampton County Medical Society at a meeting, December 20, voted to sponsor the Physicians and Dentists Business Bureau of Lehigh Valley, following a report of the work of the bureau in handling 25,000 accounts.

## Philadelphia

**Society News**—Dr Charles A. Doan, Columbus, Ohio, among others, addressed the Pathological Society of Philadelphia, January 9, on "Clinical Experimental Studies on the Pathologic Physiology of the Spleen."—Dr Joseph C. Yaskin delivered his presidential address before the Philadelphia Psychiatric Society, January 10, on "Psychoneuroses and Neuroses. A Review of One Hundred Cases."

## SOUTH DAKOTA

**Society News**—At a meeting of the Seventh District Medical Society in Sioux Falls in December, speakers included Dr. Joseph C. Ohlmacher, dean, and Charles A. Hunter, Ph.D., professor of bacteriology and hygiene, University of South Dakota School of Medicine, Vermillion, on "Medical Education and the Medical Profession" and "Immunity and Its Practical Application," respectively.—Dr William F. Bushnell, Elk Point, was elected president of the South Dakota Health Officers' Association at the recent annual meeting in Huron. Dr. Burt A. Dyar, De Smet, was elected secretary.

## VERMONT

**University News**—The University of Vermont Medical College has announced a gift of the medical library and surgical instruments of Dr. Isadore C. Eisenberg, New York, who died March 23, 1935.

## WISCONSIN

**Personal**—Dr. John Welton Fisher, medical director of the Northwestern Mutual Life Insurance Company, Milwaukee, completed fifty years of medical service with that firm, December 15. Dr. Fisher was honored at a dinner given by officers and other representatives of the insurance company in Milwaukee, December 13.

**Society News**—Dr. Alfred W. Adson, Rochester, Minn., addressed the Outagamie County Medical Society, Appleton, November 21, on "Essential Hypertension. Surgical Consideration. A Study of Clinical Results Obtained by Extensive Sympathectomy and Rhizotomy." Members of the Fond du Lac, Winnebago, Calumet and Brown-Kewaunee-Door county medical societies were guests.—Leon J. Cole, Ph.D., of the College of Agriculture, University of Wisconsin, Madison, addressed the university medical society, December 11, on "Heredity in Relation to Medicine."

**Rogers Memorial Sanitarium.**—Dr Arthur W Rogers, for many years director and owner of the controlling interest in the Oconomowoc Health Resort, a sanatorium for nervous and mental disease near Oconomowoc, has purchased all the stock of the institution and converted it into a non-stock, non-profit-making corporation as a memorial to Mrs Rogers. It will henceforth be known as the Rogers Memorial Sanitarium, operated by Dr Rogers under the direction of a board of trustees made up of Drs Rogers, James C Hassall, medical superintendent, Peter Bassoe Chicago, and William S Middleton, Madison, Mr T H Spence, Mr Mitchell Mackie and Mr Mackey Wells, all of Milwaukee. In addition, Dr Rogers has arranged that his entire estate will be left as an endowment for the institution. Income from this fund will enable the sanatorium to establish a psychiatric laboratory, to hold clinics and graduate courses in neurology and psychiatry, to publish papers and in general to conduct a sanatorium at minimum cost to its patients and to contribute to the advancement of neurology and psychiatry. The sanatorium is made up of a main building with adjacent cottages on a fifty acre estate on Upper Nashotah Lake in Waukesha County. It is estimated that Dr Rogers' gift is worth about \$1,000,000.

### GENERAL

**Certification by Pediatric Board.**—The American Board of Pediatrics wishes to call the attention of pediatricians to the fact that, after September of this year, no man with ten years' experience or more will be certified without examination.

**Deaths from Football Injuries.**—Thirty deaths occurred during the 1935 football season directly attributable to the game, according to a study recently made by Prof Floyd R Eastwood of New York University and summarized in the *New York Times*. Professor Eastwood found that in the five years 1931-1935 a total of 147 football deaths were recorded. Of these he asserted that 34 per cent were due to faulty leadership, 6 per cent to equipment and facilities and 60 per cent to the nature of the game itself. He noted especially that the death rate among high school players is increasing, fifteen occurred in 1935 as compared with thirteen in 1934. Most of the players killed were halfbacks, tackles and ends. It was estimated that there were 55,440 accidents resulting in injuries to high school players and 9,900 to college players. Besides the deaths from injuries, 68 other deaths among players were caused by pneumonia and other diseases. Professor Eastwood recommended, among other measures to improve the safety of the game, pre-season medical examination of all candidates, adequate physical conditioning, the presence of physicians at all games, increased use of protective devices by halfbacks and ends, and development of field coaches with authority to remove injured players from the game.

**Automobile Fatalities Increase.**—In 1935 there was a total of 36,400 deaths reported as compared with 36,101 for the previous year, according to the National Safety Council establishing a new all time high. Because of an increase of about 1 per cent in the population, the death rate per hundred thousand of population in 1935 was the same as in 1934. 28.5. Automobile registration advanced 4.3 per cent from 1934 to 1935 and gasoline consumption about 6 per cent, indicating an increase in the number of miles the average motorist was able to travel without an accident. Eastern states including New England, reduced fatal accidents 3 per cent with Massachusetts and Rhode Island leading with decreases, based on figures for eleven months, of 19 and 15 per cent, respectively. Milwaukee showed a rate of 11.2 deaths per hundred thousand of population the lowest of any city over 500,000 population. Providence, R. I., in the group of cities from 250,000 to 500,000 population had a rate of 7.0 about one third the average for all cities in its group. The National Safety Council began a five year program to reduce automobile accidents throughout the country, January 1. Using the total of 36,400 motor fatalities of 1935 as a par it aims this year to obtain through educational programs a reduction of 7 per cent for the country at large, which would be an actual saving of 2,548 lives.

**Medical Bills in Congress.—Bills Introduced.** S 3475, introduced by Senator Frazier, North Dakota, and H R 9680, introduced by Representative Lundeen, Minnesota, propose to establish a nation wide system of social insurance, providing compensation for the unemployed aged or disabled beneficiaries. S 3499, introduced by Senator McNary, Oregon, proposes to direct the Administrator of Veterans' Affairs to place on the pension roll subject to the provisions and limitations of the pension laws the name of each person who served the United States as an acting assistant surgeon or contract surgeon during the war with Spain, including the Philippine Insurrection and the Boxer Rebellion. H R 9473, introduced by Repre-

sentative Bland, Virginia, proposes to provide that no individual, partnership, association or corporation shall employ any person to serve as medical officer or ship's physician on a registered or enrolled and licensed vessel of the United States unless such person is duly licensed to act as such by the Surgeon General of the United States Public Health Service. H R 9475, introduced by Representative Sauthoff, Wisconsin, proposes that if a veteran suffers a permanent loss or loss of use of both eyes, without regard to the time or cause of such loss, he shall be paid a pension of not less than \$72 a month. H R 9495, introduced by Representative Dobbins, Illinois, proposes to provide that any person guilty of depositing or causing to be deposited in the mails certain unmailable matter may be prosecuted either in the district in which the unmailable matter was mailed or in the district to which it is carried by mail for delivery. H R 9993, introduced by Delegate King, Hawaii, proposes to authorize an appropriation not to exceed \$250,000 to erect a hospital in Hawaii for the care and treatment of persons entitled to domiciliary or hospital facilities under the laws pertaining to the Bureau of National Homes, formerly the National Homes for Disabled Volunteer Soldiers.

**Society News.**—The thirteenth annual meeting of the American Orthopsychiatric Association will be held at the Hotel Statler, Cleveland, February 20-22. The Association of American Physicians will hold its annual meeting at Atlantic City, May 5-6. At the midwinter meeting of the American Psychoanalytic Association in Boston, December 28, speakers included Drs Karl A Menninger, Topeka, Kan, on "Psychoanalytic Aspects of Some Gynecologic Disorders," and Isador H Coriat, Boston, "Humor and Hypomania." Dr Eugene Lee Shrader, assistant professor of internal medicine, St. Louis University School of Medicine, St. Louis, was elected president of the American Student Health Association at its annual session in New York, December 28, Dr Lee W Milford, Clemson College, Clemson, S C, vice president, and Dr Ruth E. Boynton, associate professor of preventive medicine and public health, University of Minnesota Medical School, Minneapolis, secretary. At the annual convention of the Phi Delta Epsilon Fraternity in Philadelphia, recently, a resolution was adopted to the effect that the fraternity support the American Medical Association in its stand against socialized medicine. Edwin Grant Conklin, Ph D, professor of biology, Princeton University, Princeton, N J, was chosen president-elect of the American Association for the Advancement of Science at the annual session in St. Louis, December 30-January 2. Dr Joseph T Wearn, Cleveland, was named vice president to be chairman of Section N (Medical Sciences) and Dr Ross G Harrison, New Haven, Conn, vice president of the section on zoological sciences. At the annual meeting of the National Society for the Advancement of Gastro-Enterology in New York, December 5, the following officers were elected: Drs Anthony Bassler, New York, president, Albert J Sullivan, New Haven, Conn, Harry M Eberhard, Philadelphia, and Samuel Bernard Kaplan, Newark, N J, vice presidents, Roy Upham, New York, secretary general, and William C. Jacobson, secretary.

## Government Services

### Allergy Unit for Veterans' Facilities

The medical and hospital service of the Veterans Administration announces that an allergy unit has been established at the facility at Aspinwall, Pa, under the direction of Dr Leo H Crip. The laboratory of the unit will prepare allergens for skin testing for other facilities and will be a teaching center for physicians attached to the administration.

### Examination for Medical Corps of Navy

An examination of candidates for appointment in the medical corps of the U S Navy will be held at the Naval Medical School, Washington D C, and the Naval Hospital, Mare Island, San Francisco beginning May 18. Applicants must be graduates of schools listed as class A by the Council on Medical Education and Hospitals of the American Medical Association, must be citizens of the United States and must have served at least one year's rotating internship in a civilian hospital. Candidates must be between the ages of 21 and 32. For further information and application blanks, address the Surgeon General of the U S Navy, Navy Department, Washington, D C.



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Dec. 14, 1935

#### The Right to Die

The Voluntary Euthanasia Legalization Society held its first public meeting recently in the House of the British Medical Association. The president of the society, Lord Moynihan, said that this was the first chance of putting the aims of the society before a public meeting. In spite of the greatly strengthened capacity of the profession to relieve pain, there were cases in which the agony was intense and the fatal issue inevitable.

Mr C. J. Bond (surgeon), chairman of the executive committee, said that the project dated from Dr C. K. Millard's address to the Society of Medical Officers of Health in 1931. Civilized man today was being called on to exercise increasing control over human development and human life. This meant control at entrance and at exit. To exercise this control wisely, a truer conception was needed of the real value of life, which consisted not merely in living but in living usefully and happily. Where there was no hope of cure or restoration to health and usefulness, the wish of the sufferer to terminate a burdensome and unhappy existence should be respected. Ours is an aging population and thus the total amount of suffering and useless lives grows larger and requires wise handling. The position of the physician with regard to euthanasia was difficult. It was his duty to relieve suffering by every means. But the sufferer might become habituated to the anodyne, very large doses were then required, and the balance between an anodyne and a lethal dose might become a very delicate one. Moreover, the repeated return to consciousness, difficult to avoid, might be a very depressing and sad experience. Indeed, the prolongation of life by the use of drugs might increase suffering. By the proposed bill the physician could deal with suffering more effectively. What was now being done secretly and ineffectively could be done openly on a legal basis. Such criticisms as had appeared in the press, describing the proposal as "a bill to promote murder" and a physician who helps a sufferer as a "public executioner," were entirely beside the mark. The physician in such a case should be looked on as an anesthetist whose relief is permanent.

Dr C. Killick Millard (formerly health officer), honorary secretary of the society and its founder, said that much of the suffering in the world was due to certain diseases which killed by a slow lingering process of exhaustion due to pain and suffering. All through the world's history there had been those who wondered whether all this pain and suffering in dying from incurable disease was necessary, whether it really was God's will, or whether it might not be right under certain circumstances to substitute for the lingering and painful death a quick and painless one. As the law now stood any one, no matter how great his sufferings or how certain his doom, who took on himself to terminate his life was guilty of suicide, and any one who aided him was guilty of murder. The law was harsh and unmerciful and was out of harmony with the humanitarian spirit of the age. A prominent layman the earl of Listowel, and a number of well known clergymen spoke in favor of the bill. They could see no moral or religious objections to it. Rev. Dr. Norwood said that a society which maintained capital punishment should not condemn loving and sensitive people to watch the lingering death of one dear to them, knowing that such an attitude would be indefensible if a dog was the sufferer.

The only opposition came from Dr C. O. Hawthorne, member of the Council of the British Medical Association. He said that though the meeting was held in the House of the British Medical Association the latter was not responsible for it and

the council had never considered the question. He said that the position contemplated—that of a sufferer from severe and prolonged pain with the prospect of a fatal termination—was most exceptional in medical experience. On the other hand, the remedy proposed was an enormous change in the social life. Once admitted, the principle was likely to have extensions. It had already been hinted that pain would not be a necessary condition, but only uselessness. Further, a sufferer from severe and prolonged pain was in no condition to exercise a calm judgment or to appreciate fully the issues involved in his decision. Was there not something repulsive in a family council to decide whether a father or mother should be urged to or deterred from suicide? Also the tribunal might make mistakes. Lord Moynihan said that Dr Hawthorne had made a poor case. However exceptional the condition for which relief was sought, those who had seen it would feel that justice was on their side. It was an unworthy point to say that physicians were capable of making mistakes. In the kind of case contemplated there was no possibility of doubt whatever. A resolution in favor of the bill was carried by a majority of ten to one.

#### Spahlinger's Vaccine for the Prevention of Bovine Tuberculosis

In a previous letter, the experiments made by the government of northern Ireland with Spahlinger's vaccine for the prevention of bovine tuberculosis were described. In the lay press, great claims were made for a valuable discovery, but informed opinion was not so optimistic. A report has just been issued by the Joint Committee on Tuberculosis of the Medical Research Council and the Agricultural Council. The committee considers that more information is required concerning Spahlinger's system of vaccination before the method can be introduced into practical farming. Besides the need for experience in preparing and testing the vaccine before use, experiments would be required to determine (1) whether the tuberculin test interferes with vaccination, as suggested by Spahlinger, (2) the best dose of vaccine and the best method of vaccination, and how early in life it is safe to vaccinate a calf, (3) the most suitable age for vaccination, how early in life it is safe to vaccinate a calf, (4) the time after vaccination at which immunity appears and how long it lasts, (5) the persistence of immunity in animals exposed once or repeatedly to infection by natural means, especially whether vaccination early in life would protect under farming conditions at an age when heifers would join the herd—that is, when they calve for the first time, and (6) whether natural exposure to infection, as opposed to an intravenous test dose, would result in only mild or negligible infection, as has been suggested. The committee states that a case has been made out for further investigation. A thorough test should be made in this country if Mr. Spahlinger is willing to supply vaccine in sufficient quantity for inoculation of a suitable series of animals. The committee recommends that, until the vaccine has been shown by further and extended experiments to be effective against natural as well as experimental methods of infection, its practical application should be deferred. The members of the committee "deprecate most strongly its enforced general use until a thorough investigation has been made."

#### "General" Peritonitis

Mr. Sampson Handley expounded certain points in the pathology of peritonitis which directly bear on the problem of paralytic ileus. General peritonitis was rarely universal, even at the time of death. For his adoption of the upright posture man paid a high price in his liability to hernia and enteroptosis, but he secured the countervailing advantage that his peritoneal cavity drained to a low point—the pelvis—not only in the erect but also in the reclining posture. The dog had no such advantage and peritoneal infection killed him in three days.

Mr Handley has seen only once a really universal general peritonitis, affecting even the stomach and the diaphragm. It occurred in a boy of 10, who made a good recovery after appendectomy and pelvic drainage, without developing obstruction. This case shows that, in the absence of ileus, even universal peritonitis is not necessarily fatal.

In man peritonitis begins in the pelvis. Even when the septic focus, such as a pinhole duodenal perforation, is high in the abdomen, and still more in infections arising lower down, such as appendicitis, the infective material drains rapidly into the pelvis, unless adhesions form. Thus only limited spread occurs around the original focus, but an intense inflammation arises in the rectovesical pouch, to which the septic products gravitate. The pelvis fills with pus from below upward and thence the pus rises gradually into the hypogastric region and hypogastric rigidity appears. When the peritonitic flood has risen up to or a little higher than the umbilicus, intestinal paralysis kills the patient. The floodlike invasion of the peritoneal cavity from below upward has the important consequence that the stomach, jejunum, transverse colon and of course the liver and diaphragm remain uninflamed and unparalyzed until the patient is moribund. This is the key to successful treatment. These facts Mr Handley has ascertained by direct inspection of the upper abdominal region during a large number of laparotomies and has verified them post mortem.

Thus there are three clinical stages of so-called general peritonitis: (1) pelvic peritonitis, (2) hypogastric peritonitis and (3) the hopeless "clinical picture" or textbook stage. In pelvic peritonitis there are acute rectal and vaginal tenderness with edematous thickening of the rectovesical fold and of the uterosacral ligaments. There are hypogastric distention and tenderness and perhaps vomiting, but no hypogastric rigidity, though there may be right iliac rigidity. If the appendix is pelvic it may be felt as a definite swelling. Uterine hemorrhage may occur in very acute pelvic peritonitis due to appendicitis. But it is on recognition of hypogastric peritonitis that the patient's life depends. This stage is characterized by the appearance of hypogastric rigidity and by immobility supervening on the previous hypogastric distention. Above the umbilicus the abdomen is flat or only slightly distended, still soft and only moderately tender. On palpation a resonant rounded swelling, almost as definite in its upper outline as the distended bladder, and reaching to the level of the umbilicus, can be felt in the hypogastrium. It is formed by distended coils of small intestine glued together, and Mr Handley has called it "the hypogastric football." Soon the supra-umbilical region, though remaining soft and retaining some movement, begins to share the distention of the lower part of the abdomen and the stretching of the muscles may be mistaken for genuine rigidity. Vomiting is vigorous and at first not offensive. Though obstruction is evidently present, small quantities of flatus may continue to be passed. The hypogastric stage is short—perhaps twenty-four hours. The signs of the terminal stage are those found under the heading of 'general peritonitis' in the textbooks. Rigidity is now present above as well as below the umbilicus.

#### INTESTINAL PARALYSIS

Intestinal paralysis may arise in the pelvic stage of an upward spreading peritonitis. Only the pelvic intestine—a length of the pelvic ileum and later not invariably and sometimes incompletely, a length of the pelvic colon—are paralyzed. The intestine above the pelvic brim is distended but not inflamed. In 1910 Mr Handley described this condition under the name 'ileus duplex' to emphasize the fact that there are two obstructions. He showed that successful treatment depended on recognition of this fact and the performance of ileocecostomy and cecostomy.

Ileus may remain absent during the pelvic stage of the peritonitis and supervene only in the hypogastric stage. The opera-

tive problem then is different, for longer and less defined tracts of both large and small intestine are paralyzed. When "the hypogastric football" has become palpable the time is short, but it may be assumed that paralysis has not affected the stomach, jejunum and transverse colon. Thus a small but complete alimentary canal can be constructed above the level of the peritonitic flood. A distended coil of jejunum should be anastomosed to the transverse colon and the cecum opened. Reflux takes place from the anastomosis along the transverse and ascending colon to the cecostomy. Within twenty-four hours free cecal discharge occurs, the abdomen becomes flat and soft, the pulse falls, and the apparently moribund patient begins to recover. Cecostomy is recommended in the textbooks but is not efficient, and enterostomy drains only the small intestine, being prevented from draining the large intestine by the ileocecal valve.

#### PARIS

(From Our Regular Correspondent)

Dec 6, 1935

#### Nativity in France and Germany

At the Congress of Natality held at Nantes, Sept. 26, 1935, a paper was read by Boverat on the movement of population in France and Germany. Since 1933 the vital statistics figures in these two countries have differed greatly. The decreased natality in France is well known. From a maximum number of births, 1,034,000 in 1868, there had been a steady decrease to 790,000 in 1913. In 1921 there was a temporary rise to 813,000 because of numerous marriages following demobilization. Then there was a drop to 722,000 in 1932, to 682,000 in 1933 and to 677,000 in 1934. The number of deaths in 1934 was 634,000, the lowest recorded. In spite of this the natality, or excess of births over deaths, is only 42,000.

In Germany an unprecedented number of births took place in 1934. In 1933 there were 971,000 and in 1934 an increase of 225,000, or 1,196,000 births. This increase continues in 1935. In the first three months of 1935 there were 47,000 more births than in the corresponding period of 1934. In three years the number of births in Germany has increased by 300,000.

The ratio of French to German births was 74 per cent in 1932, was 57 per cent in 1934, and will probably drop to 50 per cent this year. A resolution was passed at the congress calling the attention of the government and of the educated public to menace of a rapid depopulation of France unless an energetic campaign is initiated to encourage a larger number of births.

#### Lipoid Nephrosis in a Child

In the *Bulletin* of the Paris Pediatric Society, Professor Nobecourt has reported a rare instance of a pure lipoid nephrosis in infancy. When the child was 2 years old the parents observed an edema of the eyelids, followed by a similar condition of the skin of the trunk and lower extremities. The urine contained 2.5 Gm of albumin per thousand cubic centimeters. At the time of admission to Professor Nobecourt's service in February 1934 the child was 26 months of age. The edema of the face and lumbar regions was very marked. The examination of the heart and lungs revealed nothing abnormal. The urine now contained 6 Gm of albumin per thousand cubic centimeters but was negative on microscopic examination. The blood examination revealed a hypercholesterolemia, a hyperlipidemia, a diminution of the total proteins and an inversion of the serum-globulin ratio without nitrogen retention, all of which Professor Nobecourt considered typical for a lipoid nephrosis. About a month after the onset, the child, who had up to that time been placed on a salt-free diet and given few proteins, was then allowed a diet rich in protein. The general condition improved rapidly and the edema disappeared. Nobecourt in closing his clinical lecture, stated that the case was one of a

typical lipid nephrosis characterized by the clinical syndrome of marked edema, ascites and hydrothorax, the urinary syndrome of marked albuminuria, absence of casts and presence of double refractive bodies, and the blood syndrome of lactescent serum, increased total lipoids and cholesterol, decrease of proteins, inversion of the serum globulin ratio and absence of evidence of nitrogen retention

#### Failure of Roentgen Treatment of Tuberculous Meningitis

In the September *Archives de medecine des enfants*, Weiner and his associates report the results obtained at the Odessa Children's Hospital in the roentgen treatment of twenty-five patients with tuberculous meningitis, twelve girls and thirteen boys. In four cases an influenzal infection and in three measles immediately preceded the meningitis. The onset was sudden in five children and gradual in twenty. A lumbar puncture was done in all cases, but tubercle bacilli were found in only eight spinal fluids. The roentgen treatment was begun as early as the first to the third day after admission. In all, ten children were given the treatment from the fourth to the tenth day, and in the remaining fifteen cases from the eleventh to the eighteenth day after admission. As fields, the neck, both temporal and the frontal regions were employed. In most children two treatments were given (one each day) for the first two days, and then only on alternate days, according to the general condition. All of the twenty-five children died. Necropsies could be performed on ten of the twenty-five and revealed generalized miliary lesions and a diffuse tuberculous meningitis in every case.

#### BERLIN

(From Our Regular Correspondent)

Nov 25, 1935

#### Carcinoma of the Lung

The Medical Society of Frankfurt-on-Main devoted a recent session to the consideration of carcinoma of the lung. Professor Fischer-Wasels said that, compared with other forms of carcinoma, lung cancer, particularly since the war, has shown a striking increase. This is a general observation, although no explanation has been found as yet. For the period 1929-1934 the statistics of the Frankfurt Pathologic Institute show a ten to twenty fold increase of lung cancer. These figures cannot be explained away by the assumption of "improvement in diagnosis" and "increase in the admissions of cancer patients". As for cancer in general, one must probably seek the fundamental causes for bronchial carcinoma in repeatedly disturbed regenerative processes further, in a congenital predisposition. In the bronchitis associated with influenza and measles, one observes the formation of pavement epithelium in the bronchial mucosa. Likewise, old tuberculous cavities and recurring inflammations in old gunshot scars may give rise to regenerative processes with malignant growth. The well known Schneeberg and Joachimstal lung cancer is traced to chronic dust action and to radium salts and emanation. Pneumoconiotic influences, however, are given little weight. Of late, an increase of the predisposition to cancer has been ascribed to nicotine. It is a common observation that malformations create a predisposition to cancer. The possibility of an internal predisposition to cancer is awakening justified interest, since, likewise in the offspring of animals in which by means of tar applications, cancer symptoms have been produced, a sensitiveness to tar injuries has been demonstrated.

Experimental researches on the origin of lung cancer has thrown further light on the subject. M. Schmidtman of Stuttgart at the same session reported on inhalation experiments with Schneeberg stone dust and automobile waste gases which yielded, on protracted inhalations of arsenic-containing

dust, a deep-lying growth of the bronchial epithelium with peribronchial lymphocyte formations in the walls. Genua tumors could not, however, thus be produced. All kinds of Schneeberg stone dust brought about these changes when arsenic was mixed with them. Ordinary street dust did not produce this effect. The waste gases from gasoline motors have no effect on the bronchial mucosa even after many years of exposure, whereas the gases from oil-driven motors cause marked dust deposits with callus formation in the lungs, destruction of bronchiole twigs, emphysema and symptoms of atelectasis. Although infiltrating epithelial growth has not been observed as yet, the changes in the lungs are so marked that the inspiration of the waste gases may be said to exert considerable influence on the organism.

Professor Alwens of the Frankfurt on Main Hospital has made observations on the occurrence of pulmonary tumors in industrial plants. Since 1926 he has observed thirty cases of lung carcinoma. A number of these patients were employed at a plant that manufactured chromates in addition to sulfuric acid, hydrochloric acid and sulfates. A careful study of family history does not reveal that heredity plays any part in the disorder. In contrast with the opinion of other authors who think that chromate dust must be regarded as exerting a specific influence in the production of cancer of the lung, Alwens holds that the cases involved are too few to afford a basis for conclusions.

Professor Gross furnished supplementary material to this presentation in the form of statistics on pulmonary cancer in the chromate department of the I G Farbenindustrie. In addition to fourteen cases in the plants of this firm (some of which were included in the number mentioned), he knew of eleven further cases in the chromate plant. This makes it seem likely that there is in the chromate plant some factor that produces carcinoma of the lung. The further elaboration of the question has been taken over by the medical committee of the German Society for the Protection of Workmen.

According to the account of Bock of the Frankfurt University Clinic, forty-five primary lung cancers were observed within a period of eight years (1926-1934). Thirty nine of the cases were in men, and the location was usually on the right side.

The statistics of Hegler of Hamburg on 240 cases diagnosed during a fourteen-year period (1920-1934) likewise confirm the marked increase of lung cancer. The hospital diagnoses only 50 per cent of the cases that are discovered at necropsy, outside of the hospitals only 15 per cent are diagnosed. The condition often remains symptomless or other forms of disease are simulated. Even if the condition manifests itself solely as a lung disorder, the differential diagnosis is difficult. At the clinic the diagnosis, by bringing into action all possible aids, proved possible in 85 per cent of the cases.

Albrecht said that the roentgenograms often show great similarity to those of pneumonia. Nevertheless the metastases of the glands (particularly of the paratracheal glands) point usually to the correct diagnosis, which occasionally is not confirmed until repeated roentgenologic control researches have been made. In rare cases the primary carcinoma appears as a circular tumor. Differentiation from a metastasis, an echinococcus or an abscess is not possible from the roentgenograms alone. Confusion of the condition with certain forms of tuberculosis, actinomycosis and silicosis occurs. Generally, however, the aspects are characteristic. In any event, the roentgenogram will clear up many points.

The prognosis of roentgen irradiation was discussed by Professor Holfelder. Since lung cancer is inclined to metastasize early, one cannot count on a permanent cure unless one can succeed in destroying the cancer tissue so early that no opportunity is offered for the development of metastases. According

to present knowledge, the only treatment that will lead to practical results in the early combating of lung cancer is high voltage roentgen therapy. Nevertheless, Holfelder applied systematic irradiation to all cases of lung cancer. It was discovered, from observations in ten cases, that systematic irradiation of bronchial cancer, if begun early, will produce permanent results and may change our previous conceptions with regard to the fatal outcome of this disease.

#### Regular Health Examinations in Industrial Plants

Between the "labor front" (which has replaced the trade unions) and the federal fuchrer of physicians new agreements have been entered into concerning the institution of regular health examinations in industrial plants. This created a new basis for the protection of the health of youth working in the trades. The social bureau of the Reichs-Jugendführung has drawn up a list of minimum requirements, in order to assure the carrying out of a uniform plan of health observation for juveniles. The first thing necessary will be an efficient bureau of vocational guidance, which, on the basis of practical medical knowledge, through suitable selection of workmen, will eliminate the damage resulting from the choice of an entirely undesirable vocation. A medical examination as a preliminary to taking up new employment should be introduced, as far as possible, in all industries. The second most important feature is the demand that all possible protective devices for labor be introduced, including the creation of the necessary recess periods, rest periods and leaves of absence, in order that the needs of the youthful organism be taken full account of. A further demand is the extension of the current medical examination to all juveniles. The examination should be repeated from time to time during at least the first two years of industrial activity, in order that the effects of industrial work on the juvenile organism may be studied.

#### Ceremonies at the Berlin Charité Hospital

The Berlin Charité Hospital recently celebrated its 225th anniversary. It owes its existence to Frederick I, king of Prussia who in 1709, at the outbreak of the plague, issued so-called plague regulations, which provided among other things for the immediate erection of quarantine centers and a hospital. The Charité of later years dates back to the plague hospital created at this time. For the time being, a part of the hospital building was used as a garrison hospital. The increasing importance of the Charité Hospital is an expression of the progress of medicine in the nineteenth century. In 1810, following the founding of the University of Berlin, which is celebrating this year its 125th anniversary, the clinics of the Charité were made university clinics.

#### The Gaging of Hemometers

In 1933 the Deutsche Gesellschaft für Innere Medizin appointed a commission to make recommendations for the gaging of hemometers for clinical purposes. The commission has now made a report. Manufacturers of such instruments will be urged to gage hemometers for clinical use exclusively on a gram per cent basis. The gaging shall be accomplished on the basis of gas analysis and spectrophotometry applied to the yellow and the green mercury lines. The valuations obtained correspond to 100 per cent hemoglobin as determined electrolytically.

If a second measuring unit (so-called percentage or hemometer unit) is to be employed, 100 units should equal 16 Gm. per cent. In every case the relation must be stated in the description accompanying the apparatus. Gaging of hemometers that function with solutions of hydrochloric acid and hematin must be done with whole blood (not with pure hemoglobin solutions). In descriptions of these instruments it must always

be stated how much time should elapse between mixing and dilution of the solution of blood and hydrochloric acid or between mixing and reading of the result, in order to obtain the valuations on which the gaging is based. It is recommended that, as a rule, a three-minute period be made the standard. Instruments that are in keeping with these requirements may bear the statement "The gaging of this instrument is in accordance with the requirements of the Deutsche Gesellschaft für Innere Medizin."

#### VIENNA

(From Our Regular Correspondent)

Nov 18, 1935

#### The Size of the Heart as Shown in the Roentgenogram

During the course of lectures for physicians, organized as a "seminar" by the Faculty of Medicine of Vienna and open to every physician, Dozent Dr. Zdansky discussed roentgenograms of the heart. The size of the living heart is influenced by changes in the blood supply, changes in the resistance which the heart must overcome, and changes in the nature of the heart muscle. The size of the heart also is greater with the body in a reclining than in an upright position. These changes in size are of great importance for the roentgenologist. The "small" heart is often termed hypoplastic and congenitally inferior. In reality it is not smaller than normal but only appears so with the subject standing, because in this position it is inadequately filled with blood. Owing to deficient muscular tonus of the diaphragm and the abdominal muscles, possibly also by reason of vasomotor weakness, a portion of the blood is retained in the splanchnic area. If the subject assumes a horizontal position this blood is brought back into the circulation, and immediately the heart takes on a normal appearance. Investigations at the First Medical Clinic in Vienna have shown that this change of position brings about 1.5 liters of blood back into the circulation, whereby the heart volume, as computed roentgenologically, increases by at least 200 cc. However, true hypoplastic, inferior hearts are not rare. Tachycardia is likewise a factor in diminutions in the size of the heart. Diminished blood flow to the heart owing to a shortening of the diastolic filling phase. Abnormally small hearts are found after severe blood losses also as a result of loss of water due to vomiting or to protracted diarrhea. After extensive transfusions or during convalescence the heart becomes enlarged. One may observe in a roentgenogram a transient enlargement of a heart following the administration of a large blood transfusion, and likewise in some cases of plethora (idiopathic polycythemia). Importance attaches also to changes in the size of the heart following physical exertions. If the work performed was heavy, at first there may be a distinct reduction in the size of the heart which is difficult to explain. In weakly persons, however, distinct enlargements occur, without necessarily any cardiac insufficiency. Such hearts should be carefully watched. Caution must be exercised in the application of training for sports, in which event patients may regain their full health and strength, and the size of the heart will not exceed the normal. Observations in a large series of cases justify the assumption that the hearts that show an enlargement following training were originally under size (too weak) and that they developed to normal size under the influence of the training. There are also enlargements that are to be regarded as pathologic dilatations resulting from overexertion. Examinations of athletes have shown that one must not rely, in determining the size of the heart, on the measurement of the dimensions as revealed in a single projection. Frequently changes in the shape of the heart develop within a short time. Inside a few minutes the heart may change from an oblong shape into a more compressed form, and vice versa, so that one can scarcely believe that one is dealing with the same heart.

Professor Hitzengerger spoke on the clinical aspects of changes in the size of the heart due to changes in function. He

mentioned that many healthy persons experience dizziness or weakness on rising from a horizontal position. In such persons one may find a sharp lowering of the blood pressure, and in a standing posture they may present a very small heart in the roentgenogram. In the differential diagnosis, one must rule out spontaneous hypoglycemia, which shows similar conditions. It must be emphasized also that, in participation in sports, no considerable enlargements of the heart occur unless that organ has been recently weakened by influenza or by an anginal attack. If the heart has been thus impaired, distinct dilatations—1 cm or more in every diameter—are not rare and they require as a rule considerable time to regress. It is therefore advisable, after a patient has had an acute infectious disease, to warn him against undergoing any special training in sport for two or three months at least, and persons who, following physical exercise, show dilatations even of a transient nature should refrain from participation in any form of sport.

Researches on healthy hearts have shown that following a sudden rise of intrathoracic pressure (due to coughing or to the application of Valsalva's experiment) the heart becomes distinctly smaller. The heart blood is rapidly pressed out, and the blood flow to the heart is diminished. The longer the respiration under pressure continues, the more the heart is "pumped out."

## NETHERLANDS

(From Our Regular Correspondent)

Oct 29, 1935

### Report on Vivisection

The president of the sanitary council of the Netherlands received a communication from the minister of the interior some time ago requesting him, by reason of complaints received, to inquire into the subject of vivisection. A commission of fifteen persons, comprising advocates and opponents of vivisection, was created and after studying the problem in detail it rendered a short report, which contains nevertheless important facts. It appears that the question pertaining to the control of vivisection by law was raised first in 1880 in the *etats généraux*. In 1883 the Royal Academy of Sciences replied to a question submitted by the minister of the interior that the practice of vivisection is indispensable to higher research and that no abuses had as yet been reported. In 1889 the government declared that vivisection is practiced in all the universities of the country but that measures are always adopted to prevent suffering on the part of animals. In 1902, 1904 and 1906, further petitions were addressed to the government requesting that restrictions be imposed on the practice of vivisection. The commission appointed by the sanitary council reported that, as there was no evidence of abuse in the application of vivisection it had decided that as provided for in articles 254 and 455 of the Penal Code, which pertain to the protection of animals, it should furnish a plan for the prevention of any possible abuses. It is, however, incomprehensible how any one can regard experiments on animals as cruel treatment, for the spirit in which scientific experiments are performed, the purpose pursued and the advantages that accrue would seem to be sufficient justification. The report of this commission ended naturally with a compromise. Scientists of the Netherlands will not abuse the privilege of performing vivisections even without legal authorizations. The posting of notices in the laboratories in which vivisection is performed appears to be useless for, according to the statement of the commission, no evidence of abuse or cruelty could be adduced.

### Protection of Pupils Against Infection

The government has recently put into effect a new regulation for the protection of pupils against the results of contact with contagious diseases developing in the personnel of the instructional corps. Any applicant for a permanent posi-

tion in an institution of public instruction cannot be admitted unless he furnishes a certificate, dated back no more than six months, showing that he is not affected with tuberculosis. The public health officer having jurisdiction may require any member of the personnel of an institution of learning to submit to a reexamination with a view to securing a new certificate. The health officer and the examining physicians have the right to demand the surrender of a certificate previously issued. If a certificate is no longer valid or has been withdrawn, an instructor must sever his connection with the institution until he secures a new certificate. The law provides also penalties applicable to school directors who admit to institutions under their control persons who are not in possession of a valid certificate.

### Traffic Accidents

For the second time, the Central Bureau of Statistics, with headquarters in The Hague, has published a survey of the traffic accidents occurring in the Netherlands. Conditions in general have changed but slightly, although in the large cities there has been an upward trend in the number of accidents. More accidents occur in June and October than in any other months. The sick and the infirm are but rarely the cause of traffic accidents. The imprudent, the absent-minded, the violent, the careless and the daredevils are often found at fault. The last mentioned class do not slow down at the crossings, do not permit others to pass, make turns to suit their own convenience, do not dim their lights when indicated, and take no thought of the danger associated with driving when intoxicated.

The measures designed to prevent traffic accidents are very difficult to apply, nevertheless a strict supervision (likewise at night on the cross country highways) exercised by a well equipped police force will be sure to yield good results. Violators of traffic regulations will receive heavy penalties, large fines, prison sentences and, under certain circumstances, will have their driving license revoked. After the application of the foregoing measures it will be interesting to make a new statistical analysis and to see what progress, if any, has been made.

### Films for Instruction in First Aid

The Netherlands society that gives instruction on the best manner of rendering first aid to the injured has adopted the plan of using films. One purpose to be accomplished is to assure uniform instruction in all countries. This society bestows likewise the diplomas granting the right to render first aid to the injured. To secure the best films possible, the administration and the general assembly of the members have asked the opinion and the approval of all physicians who give courses of instruction on first aid to the injured. It is desired that as many instructing physicians as possible collaborate for this purpose, and the administration has invited them to enroll as members.

### Lead Encephalitis

Dr F. Bezemer has reported a case of lead encephalitis resulting from the use of rice powder containing lead carbonate, in a Chinese girl aged 10. Aside from cerebral symptoms that pointed to a comatose or encephalic type of malaria (examination of the blood was negative as regards the presence of the parasites of malaria), one observed an erythrocytic basophilic granulation, a mild anemia, porphyrinuria and a pathologic concentration of lead in the urine.

### The Utrecht Institute of Bacteriology and Serology

The merger of the *Laboratoire central de sante publique* and the *Institut de sérologie d'Utrecht* has given rise to the *Institut central de bacteriologie et de sérologie*. The bacteriologic section will be directed by J. F. Hulk, the former head of the *Service de sante de la marine*. Dr A. Pondman will be the director of the serologic section and the associate director of the institute. Dr Reith will head the chemical section. Dr W. A. Timmerman has been appointed general director of the



institute. The new buildings of the institute are already occupied by the various services. The old buildings will be remodeled. To assure a close connection between the new institute and the *Département d'affaires sociales*, a committee has been appointed composed of the director general of public health, the president of the sanitary council, representatives of the *Organisation centrale de physique* and several experts, while Dr. Timmerman will serve as a member of the sanitary council.

## CHINA

(From Our Regular Correspondent)

Dec. 7, 1935

### The National Health Service

The introduction of scientific medicine into China has made rapid progress during recent years. While missionaries have done a great service in the past with their hospitals and dispensaries and were for years almost the sole source of medical treatment for the people, in recent years the government and private organizations have come to the fore in a very effective manner. The national government now has a ministry of health under the able leadership of Dr. J. Hung Lui, a graduate of Harvard University and for a number of years the director of the Peiping Union Medical College. During the few years that he has directed this work there has been rapid progress. The marked success is due to his untiring energy and capable organization with the assistance of an enthusiastic group of devoted young doctors. The emphasis of this work is most appropriately being placed on public health and preventive medicine, which have now been undergoing organization and development for the past six years. The start has been made at the capital itself, where a central field health station has been established with a threefold objective: establishment of experimental and investigating institutions, demonstration of practical field work, and training of technical personnel.

The organization is divided into nine departments, which carry on their work under the direction of the ministry.

1. Bacteriology and epidemic disease control. Under this department active measures are being taken against various epidemic diseases, such as cholera, cerebrospinal meningitis, diphtheria and plague. For the preparation of vaccines and serums there is a special organization known as the National Epidemic Prevention Bureau, which is placing these products on the market at approximate cost, which is far below the cost of imported commercial products. These are rapidly being accepted by the profession as of equal or superior value.

2. Chemistry and pharmacology. During the past year this department has issued rather stringent regulations governing patent and proprietary medicines. This work is expected to remedy the rapidly growing evil of the "patent medicine" industry, which has taken on great proportions in recent years. China is perhaps the most fertile field of all nations for quack remedies. The investigation of old standard native remedies and an effort to put them on a scientific basis is an important undertaking. The great success of ephedrine, made from the old Chinese remedy *mah huang*, has given much stimulus to investigation of other old time empirical drugs. There is no doubt that the scientific investigation of these long used herbs will bring forth many more valuable remedies.

3. Parasitology. In this field a large work has been undertaken more especially with *kala-azar* and *schistosomiasis*, which are less known in other countries and regarding which there is still room for much research work.

4. Sanitary engineering. In a country the size of China with many large cities entirely devoid of any sanitary engineering one can imagine the work that is before the nation. This work is going along under the control of an effective organization.

5. Medical relief and social medicine. It is felt generally by medical workers that it is impossible for most localities in China to afford the cost of scientific preventive and curative medicine. For this reason it is now being argued that state medicine is the only solution. The ministry of health is making a study of this matter and carrying out certain experiments. Experimental work is being done in the province of Hunan, and if it proves successful it is quite likely that state medicine will become an actuality throughout China. Various other experiments with social medicine are being tried by other organizations, both philanthropic and missionary. Active work along this line by the department in the country round about the capital during the past year has resulted in a total of 892,170 treatments and preventive measures.

6. Maternity and child health. A midwifery school has been established. It is the plan to introduce modern midwifery work throughout the country as rapidly as possible. In close association with this is child welfare work. Already a large number of centers have been opened.

7. Industrial health.

8. Epidemiology and vital statistics. The department is now receiving monthly returns from 600 different stations regarding epidemic diseases. The registration of deaths, births and marriages is rapidly becoming a routine procedure.

9. Health education. This work has been carried on longer than anything else and was started by mission medical organizations years ago. The government is now pushing it in a most effective manner. Models, charts and other illustrative material are being turned out at an enormous rate of production. These are being utilized all over the country in schools, hospitals and other public places in a manner that is making the people health conscious. The effect of these things is strikingly noticeable to those who have been in China for fifteen years or more.

All these departments are cooperating in the training of a personnel for the conduct of their work as it rapidly reaches out into new territory. Various groups of workers are being constantly trained. Some of these are as follows: public health medical officers (six months' course for experienced doctors), sanitary inspectors (six months), public health nurses (six months course for graduate nurses), school teachers (one month), pharmacists (advanced course, two years), students in the central school of nursing (three years), students in the first and the central midwifery schools (two years).

On the wall of the department in Nanking is hanging a recent photograph of these various groups, which are now in training. There is a total of 538 individuals in the picture, and when one thinks of this as being developed in about two years' time, one must look with admiration on the wondrous achievements of the department of health whose future looks bright.

Besides this training and work which is being done in Nanking, the department is prepared to cooperate with all medical efforts along the lines of preventive and curative work. For instance, a mission hospital during the past summer undertook to give a two weeks intensive course on public health to all the school teachers of the district in conjunction with the school authorities. This mission hospital received the most enthusiastic cooperation and free help from the department in giving this instruction to nearly 200 school teachers.

It would probably be difficult to find in modern history any country where more rapid development of scientific medicine can be shown than in modern China. If the country can be saved from militarism and outside encroachments for a few years, the eyes of the medical world will be turned to China for the most striking example in public health work that has been accomplished anywhere.

## ITALY

(From Our Regular Correspondent)

Oct. 30, 1935

## Proposed Changes in the Medical Curriculum

The superior council of the department of public instruction has approved the changes in the medical curriculum recommended by a committee of university professors appointed by the minister. The proposed changes are based on the principle that the subjects of instruction shall be divided into two groups, fundamental and supplementary, and are associated with the concept that the university must train the general practitioner, a physician who combines a good scientific mind with a knowledge of the essential needs of practice, and who is capable of deepening his knowledge and taking up specialties as time goes on.

There are twenty-one fundamental subjects recognized, and an examination in each is obligatory. There are fifteen supplementary subjects, for which only three examinations are required, the three to be chosen by the student. The complete medical course is subdivided into three two-year courses, termed the biologic course, the propedeutic course and the clinical course. The student will not be permitted to take up the studies of the succeeding two-year course until he has passed all the obligatory examinations of the present course.

In the first two-year course the present subjects of botany and zoology will be replaced by general biology, which will include genetics and racial biology. Physics and chemistry will be taught in special relation to medicine. The greatest range is given to anatomy and to physiology, in which the instruction is biennial, extending over the whole two years.

In the second two-year course, the student is trained in the methods of examining the patient and in the use of curative measures. The courses in general pathology and pathologic anatomy are coordinated with the two courses in special pathology. All these courses are biennial.

The third two-year course is devoted entirely to clinical instruction. The clinical courses, medical and surgical, are biennial. The courses in obstetrics and pediatrics cover but one year. The five other clinical subjects are completed in one semester, with not less than twenty-five lessons. Before graduation a student must serve one semester as intern in a large hospital.

## Meeting of Medical Academy of Rome

At a recent session of the Accademia medica di Roma, presided over by the surgeon Prof. Roberto Alessandri, Professor Jura spoke on preoperative and postoperative glycemia, which he studied in numerous patients operated on for such disorders as appendicitis, hernia, cholecystitis and gastroduodenal ulcers. The examinations were made before the intervention and during the first ten days following, with repeated estimations on different days. In all the patients the preoperative glycemia was within normal limits, following the operation, changes occur depending on the nature of the disease and the condition of the patient. But, as a rule, within the first ten days there was a return to normal. The same investigator studied also the behavior of azotemia, chloridemia and the alkali reserve in eighty patients subjected to abdominal operations. During the ten to fifteen days following the intervention, the azotemia showed an increase in comparison with the preoperative values, the most conspicuous increase was observed the second day, with a return to normal after from six to eight days. When the course of the operation was normal a reduction of the chloridemia corresponded to the increase in azotemia. In the cases in which intestinal paralysis or vomiting occurred it was found that, even before the intervention, the azotemic values tended toward the highest normal or were higher than normal. The postoperative chloridemia was normal or presented only a

slight diminution. In such cases, after the operation no strict parallelism between azotemia and chloridemia was observed.

The alkali reserve is usually normal before the operation in patients with appendicitis and hernia, below normal in gastric and duodenal ulcers, and high in cholecystitis. After the operation it is lowered in cases of appendicitis and cholecystitis, it is increased in hernias and in ulcers. These variations were more enduring than those observed with respect to azotemia and chloridemia.

Professor Jura likewise studied in fifty-five patients with gastroduodenal ulcerative disorders the behavior of chloridemia and alkalosis in relation to gastric acidity, before and after the operation. It appeared that, taking especially into consideration the chlorine of the blood plasma and the corpuscles, in almost all the cases observed the chlorine values were a little below normal. After the operation there was an increase of the chloridemia. A similar behavior was noted with regard to the alkali reserve.

## New Hospitals

The new hospital for infectious diseases was opened in Rome, October 28, on the Via Portuense. Located on a plot of about 35 acres, it is sufficiently removed from habitations but is easily accessible. The general services are entirely separate from the departments for infectious diseases, the fumigation plant being located between them. The departments for infectious diseases comprise the "casa dei contumaci" for gravely contagious diseases, with three pavilions of 130 beds each, which may be expanded to 200; an observation pavilion with a men's department and a women's department, each divided into four wards for various diseases, and five pavilions for the ordinary infectious diseases—one for paying patients.

The Association of Italian Clergy has acquired a large villa at Vigne d'Arco, where the first Italian sanatorium for priests will be located. Until now, members of the clergy affected with tuberculosis have had no sanatorium of their own. In France a well equipped sanatorium for priests has been functioning at Thorene for some time.

## Exhibit of Old Medical Works

In connection with the numerous medical congresses to be held this year at Bologna, an exhibit of old medical books was organized. The organizer of the exhibit was Professor Sorbelli, director of the Biblioteca comunale di Bologna. The exhibit contained important medical works dating down through the sixteenth century to the time of Malpighi. Particularly noteworthy, and interesting for its antiquity, was a codex dating back to the thirteenth century, which was admired by Dante Alighieri for its magnificent miniature illustrations from the hand of Franco Bolognese.

## Marriages

EDWARD KESSLER, Greystone Park, N. J., to Miss Barbara Marilyn Newblatt of Brooklyn, Oct. 20, 1935.

HORACE J. HANSEN, Sheboygan Falls, Wis., to Miss Eliza Beth Humbregetse at Oconto, Oct. 26, 1935.

MANLY E. HUTCHINSON, Columbia S. C., to Miss Hildegard Schroder of Charleston, Nov. 30, 1935.

LELAND FLOYD HOBBS, Jewell Ridge, Va., to Miss Catherine Jones of Tazewell, Nov. 30, 1935.

LYON STEINE, Valley Stream, N. Y., to Miss Jane Edna Shulof of New York recently.

ROBERT BRUCE HART, Hope, Ind., to Miss Margaret Sage of Brownstown, Nov. 28, 1935.

HERBERT PARSONS to Miss Margaret Worrall, both of New York, Nov. 30, 1935.

SYDNEY MOSKOWITZ to Miss Gladys C. King, both of New York, Dec. 29, 1935.

## Deaths

**Nathan Porter Colwell** ♂ for many years Secretary of the Council on Medical Education and Hospitals of the American Medical Association, died of cerebral hemorrhage at his home in Wilmette, Ill., January 6, aged 65 years. Dr Colwell was born in Osceola, Iowa, May 25, 1870, and received his medical degree from Rush Medical College in 1900. He became associate instructor in otology at his alma mater and served at the same time as assistant dean in Rush Medical College.

In 1901 THE JOURNAL published its first Educational Number, which included a survey of American medical colleges, and in 1903 its first annual State Board Number. Apparently as a result of these surveys the House of Delegates of the Association was stimulated to the formation of the Council on Medical Education in 1905 and Nathan P. Colwell became its first secretary in 1906.

From that time he made numerous contributions to the subject of medical education. As secretary of the Council he bore a large share of the responsibility for direct investigation and report on medical schools, for aiding the trend of discussions at the annual conferences on medical education, and for setting forth clearly the facts in relationship to medical education in the United States. He was also instrumental in organizing the Federation of State Medical Boards of the United States and drew up its first constitution, which was adopted in 1912. He aided in establishing the monthly bulletin of the federation and served as its managing editor until the time of his retirement as secretary of the Council on Medical Education and Hospitals in 1931. Each of the annual reports on medical education and on hospitals published by the Council on Medical Education and Hospitals during his tenure of office was drawn up under his personal supervision. Moreover, from 1904 to 1915 he compiled the statistics of deaths associated with Fourth of July accidents and did much in the campaign to lower this morbidity and mortality.



NATHAN PORTER COLWELL, M.D.  
1870-1936

From 1913 to 1930 he was a collaborator of the United States Bureau of Education. During the World War his knowledge of medical education was put at the disposal of the United States Army and he served as contract surgeon in the office of the Surgeon General. He was a member of the Institute of Medicine of Chicago and of Alpha Omega Alpha.

During the twenty-five years of his work with the American Medical Association he rendered devoted service at a great sacrifice of his health and leisure. In 1931 he was retired and since that time had been living at home, concerning himself partially with the preparation of a history of medical education. He was an earnest and conscientious worker, devoted to the single purpose of raising standards in medical and hospital care. His temperament was judicious and his mind analytical. To him must be assigned a large portion of the credit for the persistent and steady advances made in medical education in this country during the past quarter century.

**William Krauss** ♂ Meridian Miss., Memphis (Tenn.) Hospital Medical College, 1889, emeritus professor of tropical medicine, University of Tennessee College of Medicine, Memphis, dean and professor of pathology, clinical branch medical department, University of Mississippi, Vicksburg, 1909-1910, professor of pathology and tropical medicine, College of Physicians and Surgeons, Memphis, 1906-1909, teacher of chemistry and histology, Memphis Hospital Medical College, 1891-1903, and assistant demonstrator in anatomy, 1889-1891, secretary of the board of health of Memphis, 1890-1893, acting assistant surgeon in the U. S. Public Health and Marine Hospital Ser-

vice, as diagnostician, during the yellow fever epidemic in 1897-1898 and in 1905, fellow of the American College of Physicians, past president of the Memphis and Shelby County Medical Society, at various times on the staffs of the Memphis General, Baptist and St. Joseph's hospitals, Memphis, formerly research pathologist to the Western State Hospital, Bolivar, chairman of the National Malaria Commission and formerly chairman of the Tennessee Pellagra Commission, aged 74, died Dec. 21, 1935, in the Garity-Ramsay Hospital, Memphis, of carcinosis originating in x-ray burns of the hand.

**C. Norman Howard** ♂ Warsaw, Ind., Columbian University Medical Department, Washington, D. C., 1898, member of the American Academy of Ophthalmology and Oto-Laryngology, past president of the Kosciusko County Medical Society and the Indiana Academy of Ophthalmology and Otolaryngology, served during the World War, aged 60, died, Nov. 11, 1935, of coronary thrombosis and infection of the tongue.

**Herbert Clayton Sumney** ♂ Omaha, Jefferson Medical College of Philadelphia, 1890, member of the American Urological Association, fellow of the American College of Surgeons, at one time professor of dermatology, syphilology and genitourinary diseases, John A. Creighton Medical College, formerly on the staff of the Douglas County Hospital, aged 65, died Nov. 21, 1935, of cerebral hemorrhage.

**Charles Francis Kuhn** ♂ Detroit, Michigan College of Medicine and Surgery, Detroit, 1901, member of the House of Delegates of the American Medical Association in 1917, fellow of the American College of Surgeons, past president of the board of education, medical director of the Warren Avenue Diagnostic Hospital, aged 65, died, Dec. 10, 1935, of acute dilatation of the heart.

**Budd Van Sweringen** ♂ Fort Wayne, Ind., University of Pennsylvania Department of Medicine, Philadelphia, 1888, served during the World War, formerly professor of theory and practice, Fort Wayne College of Medicine, at one time a city councilman, on the staff of the Methodist Episcopal Hospital, aged 68, died Dec. 18, 1935, of cerebral hemorrhage.

**Homer Riale Lathrop** ♂ Casper, Wyo., Rush Medical College, Chicago, 1901, member of the House of Delegates of the American Medical Association, in 1911, in 1919 and in 1930, fellow of the American College of Surgeons, on the staff of the Memorial Hospital of Natrona County, aged 58, died, Dec. 4, 1935, of hemorrhage from a ruptured gastric varix.

**Alvin T. Lippard**, Irvington, N. J., New York Homeopathic Medical College, 1915, member of the Medical Society of New Jersey, aged 46, on the staffs of the Newark Eye and Ear Infirmary, Elizabeth (N. J.) General Hospital and the Irvington General Hospital, where he died Nov. 14, 1935, of lobar pneumonia, following a ruptured appendix.

**William Otis McBride** ♂ Fort Wayne, Ind., Northwestern University Medical School, Chicago, 1903, member of the American Academy of Ophthalmology and Oto-Laryngology, oculist and aurist to the Duemling Clinic, was connected with the Lutheran Hospital in various capacities, aged 57, died, Nov. 5, 1935, of monocytic leukemia.

**Wade Moss Gibson**, Richmond, Ky., Hospital College of Medicine, Louisville, 1897, member of the Kentucky State Medical Association, owner of a hospital bearing his name, aged 60, died Nov. 8, 1935, in the Southern Baptist Hospital, New Orleans, of chronic myocarditis thrombophlebitis of both legs and ulcer of the stomach.

**James William Gray**, Clarksdale, Miss., Kentucky School of Medicine, Louisville, 1890, member of the House of Delegates of the American Medical Association in 1916, member of the Mississippi State Medical Association, formerly secretary of the school board, aged 70, died, Nov. 7, 1935, of a self-inflicted bullet wound.

**Arthur Wildman** ♂ Brooklyn, Fordham University School of Medicine, New York, 1912, secretary of the National Association of Police and Fire Surgeons and Medical Directors of the Civil Service Commissions, served during the World War, aged 45, on the staff of the Jewish Hospital where he died Dec. 14, 1935.

**Henry Marshall Fullilove** ♂ Athens, Ga., University College of Medicine, Richmond, 1899, past president of the Clarke County Medical Society, on the staff of the Athens General Hospital, aged 58, part owner and medical director of St. Mary's Hospital where he died Nov. 17, 1935, of pneumonia.

**Carlos Theodore de Rivas**, Panama Republic of Panama, University of Pennsylvania School of Medicine, Philadelphia, 1931, assistant in clinical pathology, Woman's Medical College of Pennsylvania, Philadelphia, 1933-1934, pathologist to the Santo Tomas Hospital, aged 30, died Nov. 13, 1935.

**Herman Benjamin Miller**, St Louis, Washington University School of Medicine, St Louis, 1901, fellow of the American College of Surgeons, served during the World War, aged 56, on the staffs of the Deaconess Hospital and the Jewish Hospital, where he died, Nov 16, 1935, of pneumonia

**Carl F M Mueller**, Brooklyn, Bellevue Hospital Medical College, New York, 1893, member of the Medical Society of the State of New York, on the staffs of the Wyckoff Heights Hospital and the Bethany Deaconess Hospital, aged 71, died, Nov 29, 1935, of coronary embolism

**Herbert D Knapp**, Flint, Mich., Columbian University Medical Department, Washington, D C, 1893, member of the Michigan State Medical Society, on the staff of the St Joseph Hospital, aged 68 was killed, Nov 10, 1935, when his automobile was struck by a train

**James Carlisle Moore**, McColl, S C, Medical College of the State of South Carolina, Charleston, 1901, member of the South Carolina Medical Association, aged 57, died, Dec 13 1935, in an infirmary at Florence, of angina pectoris and pulmonary embolism

**Ralph H Parker** ♂ Des Moines, Iowa State University of Iowa College of Medicine, Iowa City, 1898, fellow of the American College of Surgeons, on the staff of the Iowa Methodist Hospital, aged 62, died, Nov 13, 1935, of carcinoma of the pancreas

**J Eaton Johnston**, Santa Monica, Calif Chicago Homeopathic Medical College, 1891, Hahnemann Medical College and Hospital, Chicago, 1905 aged 90, died, Oct 21, 1935, in a local hospital, of shock due to injury received in a fall, and arteriosclerosis

**Fenn John Hart**, Phoenix, Ariz Eclectic Medical College of the City of New York, 1883, College of Physicians and Surgeons of San Francisco, 1901, veteran of the Spanish-American War, formerly mayor of Tempe, aged 76, died, Nov 9, 1935

**Patrick Albert Smith** ♂ Faribault, Minn., Jefferson Medical College of Philadelphia, 1893, past president of the Rice County Medical Society, on the staff of St. Lucas Evangelical Deaconess Hospital, aged 69 died, Nov 27, 1935, of cerebral hemorrhage

**James Francis Prendergast**, Steinauer, Neb., John A Creighton Medical College, Omaha, 1908, member of the Nebraska State Medical Association, aged 52, died, Nov 15, 1935 at Pawnee City, of peritonitis and ruptured appendiceal abscess

**Reavill Millard Walden** ♂ Evansville, Ind., University of Louisville (Ky) School of Medicine, 1913, served during the World War on the staff of St. Mary's Hospital, aged 46, died, Nov 28, 1935, in Rochester, Minn, of cirrhosis of the liver

**Frederick Spencer Ball**, Ontario, Calif., University of the City of New York Medical Department, 1895, College of Physicians and Surgeons, Baltimore, 1904, aged 63, died in November 1935, of cerebral hemorrhage and malignant hypertension.

**William Little Bradley** ♂ New York College of Physicians and Surgeons, Medical Department of Columbia College New York 1895, aged 65, died, Dec. 19 1935, in the Roosevelt Hospital, of injuries received in a street car accident

**Charles McDuffy Wilder**, Washington, D C, University of Pennsylvania School of Medicine, Philadelphia, 1919, aged 41, died, Nov 27, 1935, of subacute bacterial endocarditis following an accidental abrasion of his hand

**Clyde Martin Balsley** ♂ Joplin, Mo., University of Louisville (Ky) School of Medicine, 1915, on the staffs of the Freeman and St. John's hospitals, aged 46 was found dead in his office, Nov 12, 1935, of heart disease.

**Clinton L Ayers** ♂ Kearney, Neb Lincoln Medical College of Cotner University, 1906 on the staff of the Good Samaritan Hospital, aged 58, died, Dec 5, 1935, in Lincoln, of heart disease and cerebral atrophy

**William Burdick** ♂ Baltimore University of Pennsylvania Department of Medicine Philadelphia, 1907, supervisor of physical education in the state department of education of Maryland aged 64, died Dec. 21, 1935

**Carl Weiland**, Wildwood Crest N J, Jefferson Medical College of Philadelphia, 1890, member of the Medical Society of the State of Pennsylvania, aged 75, died, Nov 15 1935, of a gunshot wound self-inflicted.

**William Raymond Doctor**, Des Moines Marquette University School of Medicine, Milwaukee, 1915 on the staff of the Veterans Administration Facility aged 48 died, Dec 5, 1935 of coronary thrombosis

**Alice K Brown**, Wildwood, N J, Hahnemann Medical College and Hospital, Chicago, 1882, aged 87, died, Nov 25 1935, in the Sea Isle City (N J) Hospital, of valvular heart disease and arteriosclerosis

**Benjamin F Crabtree**, Dallas, Texas, Fort Worth School of Medicine, Medical Department of Fort Worth University 1910, member of the State Medical Association of Texas, aged 62, died, Dec. 3, 1935

**Samuel B Miller**, Fort Worth, Texas, American Medical College, St Louis, 1908, member of the State Medical Association of Texas, aged 55, died, Oct 31, 1935, in a local hospital, of coronary occlusion

**William Edward Young**, Three Forks, Mont University of Michigan Department of Medicine and Surgery, Ann Arbor 1882 also a pharmacist, aged 80, died, Nov 11, 1935, of coronary occlusion.

**Seth Willard Coy**, Boston, Boston University School of Medicine, 1889, aged 72 died Nov 28, 1935, in the Winthrop (Mass) Community Hospital, of injuries received when struck by an automobile

**William Henry Mountain** ♂ Olean N Y, University of Buffalo School of Medicine, 1898, physician in charge of the Mountain Clinic, aged 59, died, Nov 27, 1935, of cardiovascular renal disease

**George Andrew Miller** ♂ Hudson, Ohio, Tufts College Medical School, Boston 1908, served during the World War, formerly member of the board of health, aged 60, died, Dec. 11, 1935

**Philip Herbert Federman**, Newark, N J, Illinois Medical College Chicago, 1902, member of the Medical Society of New Jersey, aged 56, died, Nov 26, 1935, of coronary occlusion

**Matilda Arabelle Evans**, Columbia, S C, Woman's Medical College of Pennsylvania, Philadelphia, 1897, aged 66, died, Nov 17, 1935, of nephritis and cerebral hemorrhage.

**Edward Morrish**, St. Louis, Beaumont Hospital Medical College, St Louis, 1900 aged 63, died, Nov 27, 1935, in the Missouri Baptist Hospital, of diabetes mellitus.

**Lucian L Noble**, Holmesville, Neb., Northwestern Medical College, St Joseph Mo, 1894, aged 64, died, Nov 11, 1935, in the Beatrice (Neb) Sanitarium, of malaria.

**Edward Henry Thompson**, Hampton, N H, Dartmouth Medical School, Hanover, 1896, member of the New Hampshire Medical Society, aged 72, died, Nov 20, 1935

**James David Stalsby**, Crosby, Texas, Memphis (Tenn.) Hospital Medical College, 1898, formerly chairman of the school board, aged 64, died, Nov 1, 1935

**Clarence E Neirling**, Philadelphia, Medico Chirurgical College of Philadelphia, 1911, aged 47, died, Nov 7, 1935 of emphysema and dilatation of the heart

**George Lawson Wilkins** ♂ Baltimore, University of Maryland School of Medicine, Baltimore, 1870, aged 84, died, Dec 14, 1935, of bronchopneumonia

**John L Cottrell**, Elizabethton, Tenn., Maryland Medical College, Baltimore, 1900, aged 65, died, Nov 24, 1935, of cerebral hemorrhage.

**Martin S Cramer**, Ohio City, Ohio, Starling Medical College, Columbus 1888, aged 73, died, Dec. 15, 1935, of cerebral hemorrhage.

**Albert Chester Hanson**, Portland Ore., University of Oregon Medical School, Portland, 1905, aged 54, died in November 1935

**John Donald Cunningham**, Alliston, Ont., Canada, University of Toronto Faculty of Medicine, 1909, aged 63, died, Nov 17, 1935

**James T Morris**, Stanford Ky University of Louisville Medical Department, 1889, aged 74, died, Nov 5, 1935, of heart disease.

**Robert M Kuglar**, Conley, Ga Georgia College of Eclectic Medicine and Surgery, Atlanta, 1905, aged 66, died, Oct. 8, 1935.

**Edwin Thomas Hall**, Fullerton, Calif., Kentucky School of Medicine, Louisville, 1893, aged 70 died, Nov 7 1935

**Lord Byron Barnes**, Tulsa, Okla., Barnes Medical College, St Louis, 1907, aged 50 died in November 1935

**John Walter Hodges** ♂ Miami Fla Baltimore Medical College, 1892 aged 78 died, Nov 27, 1935, of nephritis

**Joel Bartleson Million**, Newby, Ky., Hospital College of Medicine, Louisville, 1906 aged 56, died, Nov 19, 1935

**Cuvier Robb Marshall**, Springfield Pa Bellevue Hospital Medical College 1885, aged 73 died, Nov 16, 1935

## Bureau of Investigation

### INTERNATIONAL RESEARCH LABORATORIES, INC

#### Nicholas R West and His Consumption Cure "Resla"

During the past three or four years the Bureau of Investigation has received inquiries regarding an alleged cure for consumption exploited by the International Research Laboratories, Inc, which is apparently a trade name used by one Nicholas R West, who has his office in the Hobart Building, San Francisco, Calif. It may be said at the outset that Nicholas R. West is not a graduate of any reputable medical school or licensed to practice medicine in any state in the Union, nor, so far as we know, has West ever held himself out as a physician.

In April 1931, when West and his remedies were first brought to the attention of the Bureau a letter was written to Dr C B Pinkham, Secretary-Treasurer of the Board of Medical Examiners of the State of California asking for information on the man. Dr Pinkham assigned an investigation of West to one of the efficient special agents of the Board of Medical Examiners of California. The agent reported that he had a personal interview with Nicholas R. West and that West had stated that he was born in Russia of a Russian father and a German mother. He is also said to have claimed that he was a graduate in chemistry of the University of St Petersburg and had done post graduate work in other European institutions. It may be stated incidentally at this point that we have been unable to find the name of Nicholas R. West in the membership list of the American Chemical Society.

West is said to have told the agent of the board, further, that he came to San Francisco at the close of the Russo-Japanese war and had resided in that city ever since. To quote from the agent's letter to Dr Pinkham:

He [West] states that he has a remedy with which he has cured himself of tuberculosis which is used as an inhalant that will absolutely inhibit and destroy tuberculosis and he has written to Henry Ford the Rockefeller Institute and to President Hoover offering his remedy free of charge to any reputable institution that will give it a fair trial and that he does not have it for sale at the present time, that he claims 100% cures in incipient tuberculosis and a large percentage of cures in more advanced cases that he has had his remedy tried out under the supervision of physicians and surgeons both here and abroad whose names he declined to give and that he has records of over 400 cures.

About the same time the San Francisco Tuberculosis Association turned its attention to consumption-curer West. Mr Paul Neiman, General Secretary of that association, interviewed West and in a letter has given the results of the interview. In addition to finding out that West was a native of Russia, he learned through an application for a marriage license that West was about fifty or fifty-one years old at that time (1931). Mr Neiman also ran through a file of San Francisco city directories. In 1913 one N R West appeared as being with the Union Oil Company and this listing continued until 1916 when the names Nicholas R West chemist and the Nicholas R. West Laboratory were listed. These continued to appear until 1920 at which time West's name appeared in the classified section under Oil Refiners. At that time apparently, West was using the trade name Master Refining Company and was exploiting "Master Oils." This listing also continued until 1926. In 1927 and 1928 the name Nick R. West appeared as manager of the Master Candle Company. In 1929 the same name was given as bookkeeper for the Master Candle Company. In 1930 the name appeared Nicholas R West Investment Securities with an office at 582 Market Street and a residence at the Union League Club.

Mr Neiman reported further. That West told him that when he came out of the Russo-Japanese war he had tuberculosis of which he eventually cured himself that a reputable physician of San Francisco who specialized in tuberculosis had suggested that West might make some demonstration in the physician's laboratory but this West was unwilling to do that

West claimed his "treatment" was introduced into the lungs, where it killed the germs!

A statement reported to have been made by West both to Mr Neiman and to the agent for the California Board was that West had declared that the report published fifteen years previously (1915) in the *Daily Commercial News* a San Francisco paper, to the effect that West had discovered a cure for tuberculosis, was premature and that it was not until March, 1931, that he was thoroughly convinced that his treatment was perfected. Nevertheless, in August, 1931, West was sending out reprints of the 16 years old *Daily Commercial News* item as part of his advertising ballyhoo. The item stated, among other things, that West was formerly a chemist for the Russian government and was in San Francisco on "leave of absence," which had been extended by the government of the Czar to West.

One of West's methods of publicity has been to write letters to various wealthy men and organizations, in the hope, apparently, that financial aid would be given him. West is said to have remarked of his "cure" that "there could be enough money in it to make millionaires out of fifteen men."

Following the investigation in 1931 by the Board of Medical Examiners of California, nothing was heard from that source until November, 1933. At that time the board's agent reported to Dr Pinkham that he was now in possession of documentary evidence, including canceled checks and other material that proved, not only a violation of the section of the California law that prohibits unqualified persons from practicing medicine, but also showed a conspiracy to violate the terms of the medical practice act. It appears that West had been treating a seventeen-year-old boy for pulmonary tuberculosis. In October, 1932, the lad was attending high school when he had a hemorrhage, for which he was treated by a reputable physician, who advised that he go home, where he could have a rest for a considerable period of time. In the meantime the boy's aunt was alleged to have heard a radio broadcast from West's organization relative to the alleged cure and she advised the boy's mother to get in touch with West. Subsequently West is said to have called on the family and to have assured them that he could cure the boy, and to have stated in a letter written in April, 1933, that the boy would be cured within six months. The state, however, had a death certificate showing that the boy had died of pulmonary tuberculosis in less than six months!

The board's agent reported further, that West had prescribed remedies of his own selection examined X-ray films furnished him by the mother of the boy, and in other ways obviously practiced medicine within the meaning of the act. There was also evidence to show that someone representing himself as "H W Davidson" from the so-called International Research Laboratories Inc the trade name used by Nicholas R West purchased supplies of medicine from Boericke and Runyon of San Francisco and relabeled them as "Resla" products purporting to be the "natural elements" discovered by Nicholas R West. In addition, "H W Davidson" is said to have purchased remedies from the Frederick Stearns Company, San Francisco branch, which in turn were sent out as products of the International Research Laboratories.

The state authorities proceeded against West and in a jury trial in Department 12 of the Superior Court Superior Judge I L. Harris presiding on June 20, 21 and 22, 1934 Nicholas R. West and H W Davidson went on trial following a grand jury indictment for conspiracy to violate the medical practice act. Unfortunately, the case fell to pieces when it was brought out in court that H W Davidson did not exist but was a name used by Nicholas R. West. Incidentally, it was developed that an affidavit made by West in 1932 pursuant to the demand of Dr Pinkham of the Board of Medical Examiners for the names of persons associated with the International Research Laboratories was a perjured affidavit in that West appeared before a notary public and made affidavit that he H W Davidson, was president of the International Research Laboratories and executed and signed the affidavit as H W Davidson.



## Correspondence

### PNEUMOCOCCIC MENINGITIS

*To the Editor*—In THE JOURNAL, Dec 7, 1935, two authors report cases of pneumococcic meningitis with recovery following different methods of therapy. While it is certain that both patients had meningitis, it is by no means proved that the pneumococcus was the cause in either. In both cases the etiologic diagnosis was based solely on the recovery of gram-positive diplococci in the spinal fluid. Observers of long experience know that it is impossible to differentiate pneumococci from certain other cocci on a morphologic basis alone. To identify pneumococci as such it is necessary to test the character of growth on blood agar, the bile solubility and mouse virulence, and to determine to which serologic type the organism belongs. From recent studies it is known that practically all strains of pneumococci can be classified into one of thirty-two recognized types by fairly simple technic.

Unless authors exercise more care in the etiologic diagnosis of infections in general and of meningitis in particular, or refrain from applying unqualified positive terms to unproved diagnoses, reports of cases of this kind merely serve to encumber the literature and statistics with misleading data.

HOBART A. REIMANN, M D, Minneapolis

### TREATMENT OF COMMINUTED COLLES' FRACTURE

*To the Editor*—In re Dr Haggart's report on the treatment of comminuted Colles' fractures in THE JOURNAL, November 30, I do not doubt that his results represent the peak of achievement in the present methods of treating these fractures. This is true despite the differences of opinion as to treatment among those who discussed his paper.

Possibly in no other class of fractures is nature more considerate of the surgeon's inefficiency than in its overcoming his shortcomings in these cases.

If Dr Haggart, instead of showing a roentgenogram fifteen months after injury had shown the roentgenogram taken immediately after reduction, presenting also the roentgenogram of the normal wrist for comparison, he would have supplied a better measure of the efficiency of his treatment.

My experience with these cases has convinced me that manual traction, various flexions and the postural splinting are but child's play.

At the recent session of the American Medical Association Dr Magnuson stated that from the earliest known manuscript to the present time the principles of treatment of fractures have not changed. He need not have been so recent. Doubtless the first Neanderthal hunter who broke his leg in the chase implored his companions to pull it straight and bind it up with sticks and pliable roots. This principle of treatment dominates in most of the fracture practice of today.

Extension and immobilization of the fracture are fundamental necessities. However, the practice of these powers is still in the elementary plane. It seems that the demand for a more advanced grade of applied mechanics is distasteful to medical men.

Modern textbooks are given to dogmatic statements as to the best methods of treating individual fractures. All unite in proclaiming that certain fractures will demand special treatments. However, an investigation will disclose that there is no unanimity as to the special treatment required. All fail in giving any commensurate space to the discussion of the virtues of the mechanical details.

The idea of studying the body framework, skeletal and superficial, as it lends itself to the application of more efficient

corrective powers fails to register. The present splint armamentarium is totally deficient to utilize these better powers. They seem to be considered all that can be hoped for. A splint equipment possessing these powers and adaptable to each fracture encountered is imperative.

My labors have been spent in the development of what has become a very simple and inexpensive splint equipment. For any limb fracture the splints can be assembled to exercise definitely planned and measured nonoperative skeletal traction and countertraction, lateral control and immobilization of the fracture. They give, in fact, smooth human machine shop control and efficiency. "Human" means a better regard for the physiologic, functional and tissue vitality of the parts.

Of course Dr Kennedy and all the others need an anesthetic. My splints never need an anesthetic in simple fractures of any long bone.

HARVEY C. MASLAND, M D, Philadelphia.

### A DIAGNOSTIC SIGN FOR VIABILITY OF THE FETUS

*To the Editor*—During the past few years I have been employing, along with the other better known signs of death of the fetus in utero, a test that I have not seen described. In rectal or vaginal examination on the pregnant woman with a fetus past the period of viability, gentle pressure on the head will stimulate immediate and rather vigorous fetal movements. In cases in which the baby is thought to be dead because of failure on the part of the mother to feel fetal movements, because of the inability to hear fetal heart sounds, because of the failure of the uterus to grow or because there have been other signs pointing to an unfortunate outcome, this test has proved of definite value. Active fetal movement is regularly provoked by using this simple maneuver when the baby is alive, while the failure of fetal response to this manipulation has settled, in several instances, the question of fetal death in cases in which even roentgen examination was inconclusive.

I was recently impressed with another application of this test. A question arose as to the definite diagnosis of presentation in a patient in active labor. The differential diagnosis between face and breech presentation could not be made by abdominal and rectal palpation, but the failure of the fetus to respond to gentle pressure on the presenting part led to a diagnosis of breech presentation. This was verified as the labor progressed.

The general application of this simple test will act, in many cases, to settle the question of death or presentation of the fetus.

AARON E. KANTER, M D, Chicago  
From the Department of Obstetrics and Gynecology Rush Medical College of the University of Chicago

### SKIN GRAFT

*To the Editor*—In the Davis modification of the Reverdin skin graft, the technic usually described calls for many hemostats, needles and two or more assistants.

I have recently used a technic that calls for only a hypodermic syringe, a knife, a thumb forceps and an office nurse as assistant, making this an office or home operation if necessary.

After the anesthetic solution has been injected, the needle is allowed to remain to fix the point in skin to be excised by the knife, with thumb forceps the graft is removed from the hypodermic needle by the nurse and placed on the prepared granulations.

By this technic the hypodermic needle is in no danger of contamination by contact with the granulating surface and one needle can be used throughout the operation.

R. R. SULLIVAN, M D, Lakeland, Fla.

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

### TREATMENT OF SCIATICA

To the Editor—Are mud baths of any therapeutic benefit in sciatica? Are there any reliable places you could recommend? I have a patient (a man aged 51) who suffered from sciatica four years ago. He gradually was relieved. For some months past he has had pain along the same sciatic nerve on standing but is relieved by rest in bed. All tests, Wassermann urine, blood pressure and nutrition are normal. Could you give me any suggestions? JAMES H. ROSECRANS, M.D., Hoboken, N. J.

ANSWER.—Sciatica should be regarded as a symptom, not as a disease. Although it occurs without demonstrable cause it is often secondary to disease of the lower part of the spinal column and pelvis, particularly arthritis and fibrositis. If a roentgenogram reveals hypertrophic arthritis of the lower lumbar vertebrae or sacro iliacs, it may be necessary to use physical therapy and to reduce the trauma of activity and weight bearing to the affected areas by the application of a properly fitting support. The fact that the patient is relieved when in bed but has pain on standing suggests that factors of postural trauma are present regardless of whether other agents, such as infection, are operating or not. Reduction of trauma and the use of a support would therefore be expected to give some relief.

The treatment of sciatica in general first consists of rest in bed, heat, and the use of analgesics. Various forms of heat and other types of physical therapy are helpful, among them mud baths, but simpler measures, more readily available, are preferred, such as the use of hot compresses, a "baker," or diathermy. Immobilization of the lower part of the spine by strapping with adhesive plasters or the use of a cast for a short period may be necessary. Epidural injections are sometimes of value.

A combination of therapeutic procedures is more likely to give relief than reliance on one measure alone, according to the experience of Craig and Ghormley (THE JOURNAL, April 15, 1933, p. 1143), who analyzed results of treatment in 159 cases of sciatic pain. Of these patients, 177 were ambulatory and forty-two bedfast. In the former group of eighty treated with epidural injections alone, only 52 per cent were completely relieved. Obviously other measures are indicated. Diathermy alone completely relieved 33 per cent of thirty-six patients, a belt and diathermy completely relieved 33 per cent of fifty-two patients. Injections and diathermy helped more, but the best combination was the use of epidural injections, diathermy and a belt, by means of which 85 per cent of the group so treated were completely relieved. Of those confined to bed, 86 per cent of twenty-eight patients were completely relieved by the use of a double Buck's extension, diathermy, epidural injections, intravenous foreign protein, and removal of foci. Of fourteen patients treated similarly, except that epidural injections were omitted, 63 per cent were completely relieved. Thus epidural injections gave added relief. From 40 to 60 cc. of a 1 per cent solution of procaine hydrochloride seem favored.

### SUGGESTION TREATMENT AND WARTS

To the Editor—What is there to the claims that warts can be removed by suggestion? Several physicians have asked me what it meant and I have replied that I supposed it was all a mistake that had inadvertently gotten into THE JOURNAL. But after the apparent confirmation in a recent issue it begins to dawn on me that there is something behind it all. Please enlighten me. J. W. DUNN, M.D., Cairo, Ill.

ANSWER.—Warts are benign epithelial growths caused by infection and inoculable, as Jadassohn demonstrated in 1895. They are caused by a filtrable virus, which was demonstrated by Serra and confirmed by Wile and Kingery and others. The incubation period is long from four weeks to twenty or more months, and the inoculation must be made into the epidermis or there will be no take.

As Prof. Bruno Bloch writes (Ueber die Heilung der Warzen durch Suggestion, *Klin. Wchschr.* 6:2271 [Nov. 26], 1920 [Dec. 3] 1927). It is a general belief of the people of all nations that warts are curable by suggestion. There is hardly another disease in which the belief in the value of suggestion is so strong. There is no doubt that warts of many years' duration can disappear over night spontaneously. The results of suggestion cannot, however, be laid to this alone.

Professor Heim, a Swiss geologist as a boy about 1862, saw his father cure the warts on the hands of his little sister by pointing to them and saying for each "This one goes away."

Years later, when his son was afflicted and the warts did not yield to caustic treatment, Professor Heim attempted suggestion and was successful. He first treated the warts on one hand. As they disappeared in four days he treated the warts on the other hand, and in four days the warts on the face. After that he treated many people with a good measure of success. One resistant person he had to hypnotize in order to cure. He always felt that unless he could embarrass the patient he would not obtain a cure. Stupid children he could not cure. After the age of 60 he gave up the attempt as the effort was too great.

Two things are necessary for such cures: the conviction on the part of the physician that the method is successful and, on the part of the patient, a distinctly emotional condition.

Bonjour, a neurologist of Lausanne treated warts by this method and claims no failures. He made no detailed report but his veracity is not questioned. Because they can be cured by suggestion, Bonjour thought that warts are of nervous origin.

Because of these reports, Professor Bloch, dermatologist of Zurich, became interested and treated many cases. His success with this method was as great as with any other method, medical or surgical. There were 179 cases in his series in which follow up was possible. Of common warts he was able to cure 44 per cent, of the flat juvenile variety 88.4 per cent. Forty-three per cent of the cures occurred in the first month, 39 per cent in the second month and 18 per cent after two months. Most of these cases had been treated by other methods without success. In one case the mother reported that all the warts swelled up a few days after the treatment and that some of them still showed blood crusts when observed by the physician. In four weeks all were gone except a few filiform ones on the lips and about the nostrils. These disappeared during the second month. K. G. Zwick (Hygiogenesis of Warts Disappearing Without Topical Medication, *Arch. Dermat. & Syph.* 25:508 [March] 1932) uses this fact of hemorrhage in warts after psychotherapy to support his theory that such treatment acts by dilatation of blood vessels, just as emotion causes blushing.

Professor Bloch devised a more complicated procedure than that used by Professor Heim. After carefully examining the wart he blindfolds the patient and leads him into an adjacent room, where he places him with his hands spread out, if the hands are involved. He then draws an outline of the hand, drawing in each wart life size. Then he starts a machine which produces some noise but makes no connection with the patient. He then paints each wart with some vivid color, red, green or blue, leads the patient back to the consultation room, removes the blindfold, and orders that the color be not removed from the warts or the treatment will be less effective. The patient is asked to return in two weeks and is kept under observation for several months.

One patient treated by Professor Bloch was a neurologist who was told that he would be treated by suggestion. He was indignant and expressed his disbelief in any such treatment but submitted because of his great desire to lose the warts. In spite of his disbelief and to his great astonishment, all the warts disappeared in two weeks. From the dermatologic standpoint, this is a delectable history.

Bloch proposes and answers the following objections: 1. That the series is too small to prove anything. He answers that, because of the large percentage of cures, it is large enough. 2. That the coloring matter may have exerted a chemical effect. Several different colors were used intentionally to overcome this objection. None of the colors are known to have any direct effect.

3. That a part of the cases were cured. Answer: As many as by any other method.

4. That the cures were due to spontaneous healing. There is such a thing as spontaneous healing of warts. Every one knows that, but there could not be so high a percentage at any one time. If, after any treatment, warts that have been present for months or years and have been treated in many ways without effect disappear within two to eight weeks, one is logically bound to grant a causal connection between the treatment and the cure. There are no statistics on spontaneous cures.

Memmshemer and Eisenlohr attempted to assemble such statistics (Untersuchungen über die Suggestivbehandlung der Warzen, *Dermat. Ztschr.* 62:63, 1931). They ran two series, one of those treated by suggestion, the others of those sent away without treatment. Their success with suggestive treatment was not so great as Bloch's, and they found that of those sent away without treatment about as many were well in six months as in the series of treated cases. Among the latter, however, the cures were more prompt and there were more cures among adults.

Of twenty-eight patients under 10 years of age, the warts of ten cleared spontaneously, 35.7 per cent.

Of twenty-five patients from 11 to 20 years, the warts of six cleared spontaneously, 25 per cent.

Of seventeen patients over 20 years of age, the warts of four cleared spontaneously, 23.5 per cent.

After suggestion. Of thirty-one patients under 10, four were healed, 12.9 per cent. Of twenty-two patients between 11 and 20, six were healed, 26.8 per cent. Of seventeen patients over 20, seven were healed, 41.2 per cent.

While these figures are not large, they present a most interesting problem. Is Bloch's claim admissible that the very act of dismissing the patient without treatment may be suggestive? More likely the suggestion occurred at the later visit of the physician or his assistant at the patient's house to get further data no matter how casual he tries to make his examination. This would fit in with the fact that the so-called spontaneous healing occurred in most cases later than the suggestive cure.

The facts of the suggestive therapy of warts seem to make a strong case in favor of the reality of such a process.

1 The physician must have confidence. Professor Jadassohn of Bern, who first demonstrated that warts are inoculable, tried the psychotherapy of warts for twenty years without success until convinced by Professor Bloch that it is a genuine cure. Then he could succeed also.

2 When the physician is hurried, ill or tired, his results are not good.

3 Some physicians get better results than others.

4 Stupid persons are harder to cure in this way.

5 The method has been repeatedly successful in cases that have resisted many other methods and even previous psychotherapy.

6 As Sulzberger and Wolf (*M Rec* 140 552 [Nov 21] 1934) say a wart is an excellent subject to demonstrate the cure on, for it does not depend on any impression or feeling of the patient or on indirect physical or chemical methods of demonstration. It is a pathologic tissue caused by infection and the proof of its cure by psychotherapy should be a great stimulus to the wider use of the method. Heim Bloch, Bonjour and many others have demonstrated that the sometimes harmful hypnotism is not necessary, and that the cure can be effected at times on the most skeptical.

#### TREATMENT OF ACUTE GONORRHEAL URETHRITIS AND OF GONORRHEA IN WOMEN

To the Editor.—In a new case of acute gonorrheal urethritis is it not better treatment to abstain from urethral instillations for a week or ten days? What is the best and accepted treatment for acute gonorrheal urethritis? Instillations of strong protein silver after about a week and continued once daily for a period of about a month provided there are no complications? Then the use of astringents? Copper sulfate? If properly handled should there be any complications? What will determine a cure? How soon will it be safe to have sexual intercourse again? How soon will it be safe to have intercourse with a woman again whom the patient inadvertently infected? Granted that a cure in a woman if ever accomplished is more prolonged than in a man and therefore if the aforesaid man who had inadvertently infected the woman and the urethral discharge from the man cleared up prior to the discharge from the vagina from the woman can the man be reinfected by intercourse with this woman? Is a woman with chronic nongonorrheal cervicitis and cystic ovaries likely to become infected with gonorrhea more severely? What is the best and accepted treatment of gonorrhea in a woman? The woman in question has not yet shown any symptoms of gonorrhea. Please note name.

M D Missouri

ANSWER.—In a new case of acute gonorrheal urethritis, early treatment and care are advisable. The patient must be warned about the importance of abstaining from alcohol and all forms of sexual excitement, and the importance of cleanliness. In the male, an acute anterior urethritis may be treated immediately with daily urethral (anterior only) irrigations with a mild 1:8,000, potassium permanganate solution and instillations of any of the milder silver solutions (5 per cent mild protein silver, from 0.25 to 0.5 per cent strong protein silver or 5 per cent neosilvol). If the infection is anteroposterior as denoted by cloudiness in both glasses of urine, the necessity of mild treatment must be stressed. No local treatment, except some mild anterior urethral instillations is perhaps best until the second glass of urine is clear. When this occurs, through and through irrigations with the permanganate solution may be instituted. When both urines are clear, regular prostatic massage should be started and continued for two or three months as necessary.

A cure should depend on the absence of discharge, crystal clear urine, and negative prostatic secretion. When this results a good therapeutic test of cure is found by the patient taking some alcohol by mouth. No reaction to this is sufficient evidence to suggest cure when all physical signs are negative. Intercourse should never be attempted for three months after a supposed cure without the protection of a condom. It is no

safer to have intercourse with the woman this man infected than with any other woman who recently had gonorrhea. The man may be reinfected with the same organism he passed on to her.

Chronic nongonorrheal cervicitis may allow a little earlier penetration of the gonococci but should not necessarily produce a more severe infection. Cystic ovaries play no part.

The treatment of gonorrhea in the female depends, of course, on its location. The urethritis should be treated by gentle massage to empty the ducts, followed by the instillation of any of the mild solutions, as used in the male. In a persistent skenitis, cauterization of Skene's glands may be necessary. Cervicitis in the acute state should have no active local treatment other than warm low pressure douches with a mild 1:8,000, potassium permanganate solution. When the acute stage has subsided, tampons to the cervical os and vaginal tampons are of value. The use of hyperpyrexia in females is of the greatest value and should be resorted to whenever possible.

#### PARENCHYMATOUS MENINGOVASCULAR NEUROSYPHILIS

To the Editor.—About two years ago a married man presented himself at my office with a genital lesion of two weeks duration. He admitted extramarital relations. A Wassermann report the next day of his semen was 4 plus. I convinced him of the necessity of taking a Wassermann test on his wife. The first Wassermann test was negative but the Eagle flocculation was positive. A repeated Wassermann test the next week was positive as was the Eagle test. Both husband and wife received three courses each of neosphenamine and a bismuth compound. Each series consisted of eight intravenous injections of neosphenamine 0.6 Gm and 2 cc. of bismuth in oil. At the end of the first course of neosphenamine the serologic reaction in both patients became negative. There were no rest periods and at the end of six months they would not permit any lumbar puncture. At the end of the third course of bismuth they refused further treatment and again refused lumbar puncture. The serologic reaction remained negative. During the entire treatment which took about forty-eight weeks reactions to neosphenamine never developed no secondary eruption appeared and the patients were in good physical condition as ascertained prior to the start of the syphilitic treatment. About a week ago the wife presented herself at my office complaining of headache and diplopia. The history of the present illness dates back four days prior to her present visit. There was some dull pain along the muscles of the back of her neck, which radiated up toward the base of the occiput. The pain was aggravated on motion but there was no stiffness nor was the condition preceded by an infection of the upper respiratory tract. She used some acetylsalicylic acid and was symptomatically relieved. Three days after the onset of the pain she awoke one morning with a pain over the left orbit, double vision and internal strabismus. The following day she decided to consult me as to the likelihood of the condition being the result of her syphilitic infection. I immediately made a Wassermann test which was reported negative. She refused to permit a lumbar puncture. Serologic, ophthalmologic and physical examinations were all negative except for involvement of the third nerve. Finally she was convinced of the necessity of a spinal puncture and reluctantly agreed. This was done, and the following is a report from the laboratory:

Mastic 3321000

Cells 20

Protein 37

Globulin +

Wassermann reaction negative

0.2 0.05 0.016 0.008 0.004 0.002

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I was rather surprised at the report in view of the early treatment, practically adequate amount the rapidity of involvement and the negative blood Wassermann reaction. Am I correct in considering this form of central nervous system syphilis a meningovascular type though the Wassermann reaction suggests more the parietic type while the colloidal mastic is approaching a parietic curve? The patient has no psychotic symptoms and is well aware of her condition. I have decided to use trypanamide and a bismuth compound giving ten or twelve injections of the former in 3 Gm doses at weekly intervals and 2 cc of the latter either at the same time as the trypanamide or several days after each intravenous injection. Potassium iodide in 15 grain (1 Gm.) doses three times a day gradually to be increased is also going to be prescribed. At the end of the twelfth injection of trypanamide I intend to make a lumbar puncture and if there is evidence of serologic and symptomatic improvement to permit her a rest period of six or eight weeks after which I intend to resume treatment. Of course prior to treatment and about every four weeks during treatment examination of the eyes for visual acuity and perimetric fields will be made. I would appreciate your criticism of this treatment and any suggestions you may offer. How long a period must the treatment with trypanamide be continued including the interval rest periods? Do you think malarial treatment is indicated instead? How soon may I expect relief from the orbital pain and what is the prognosis as to the restoration of the eye from the present condition of internal strabismus?

M D Maryland

ANSWER.—Headache and diplopia followed in a few days by pain in the orbit, double vision and internal strabismus with a history of a syphilitic infection a year previous is a typical clinical picture of early parenchymatous meningovascular neurosyphilis. The spinal fluid tests confirm this diagnosis. The

proposed course of treatment with tryparsamide and a bismuth compound with a periodic check up for visual acuity is an excellent plan for this type of neurosyphilis. It is a general axiom that the clinical outcome is in inverse ratio to the duration of the disease and to the amount of pre-existing damage. Complete return of the abnormal spinal fluid to normal cannot be expected in more than 50 to 60 per cent of the cases even with persistent treatment. From thirty to forty injections of tryparsamide should be administered if necessary along with large doses of iodides. Relief from the orbital pain should be prompt. The internal strabismus will probably be permanent. Much depends on whether the paralysis is partial or complete. Malaria therapy is indicated only in case of failure of clinical improvement or in case the cell count and spinal fluid Wassermann reaction fail to return to normal. The following recent article on tryparsamide therapy may be consulted. Cormia, F E. Tryparsamide in Treatment of Syphilis of Nervous System, *British Journal of Venereal Diseases* 10 99 (April) 1934

#### ADIPOGENITAL DYSTROPHY

To the Editor—I have a patient (a white man aged 22) who was examined in a hospital clinic in June 1934 and the diagnosis was hypothyroidism (?) and unrestrained appetite. He was advised to take 1 grain (0.065 Gm) of desiccated thyroid three times a day and follow a 1,200 calory diet. The basal metabolic rate was -13 hemoglobin 88 per cent roentgen examination negative, and the urine normal. A feminine distribution of weight was found. The height was 5 feet 7½ inches (170 cm.) the weight 207 pounds (94 Kg). The genitals are small but not atrophic. There is a history of family obesity. The hair is thick on the head but thin elsewhere. The blood pressure is 124 systolic 78 diastolic. The reflexes are normal. The patient had infantile paralysis at 18 months of age. The patient's tolerance for thyroid was less than half a grain three times a day, the blood pressure rising to 140 and descending when thyroid was discontinued. He has reduced 32 pounds (14.5 Kg) his present weight being 175 pounds (79 Kg). The patient's breasts appear to be as large as they were before he reduced and he states that they are embarrassing to him when he does not wear a coat in public. What treatment if any should I administer? Would preparations of the anterior pituitary be advisable? I would appreciate any information you see fit to give me. Kindly omit name and town.

M D North Carolina

ANSWER—From the description given this patient may have a mild form of adipogenital dystrophy. The breast enlargement then is probably due to adipose rather than lactic gland tissue. Two lines of attack should be tried: (1) the administration in 100 rat unit dosage, subcutaneously, three times a week for six weeks of pregnancy urine extract (either antuitrin-S or follutem) or if this fails (2) surgical ablation of the excessive tissue. A reduction diet, especially low in fat and high in protein, should be continued. If the pregnancy urine material is effective, increase of pubic hair, slight enlargement of the small genitalia, and redistribution of fat would be expected. If so, several courses at intervals of a few months might be given. If it is found that this patient has gynecomastia, an interesting discussion of the subject will be found in the paper by Geschickter, Lewis and Hartman on 'Tumors of the Breast Related to the Oestrin Hormone' (*Am J Cancer* 21 828 [Aug] 1934).

#### OCCUPATIONAL DISEASES ASSOCIATED WITH ARTIFICIAL FERTILIZER

To the Editor—I have two patients working in a fertilizer factory. Both complain of bronchitis and some dysuria and frequency. Another worker in the factory told me that he had to quit this year on account of the same symptoms. These men have all worked off and on for years and have never been troubled this way before. The factory is using for the first time this year super phosphate (ammoniated). The other chemicals being used are magnesium sulphate ammonium sulphate, sodium nitrate calcium cyanamide potassium chloride ammonium phosphate potassium nitrate fish meal and whole meal. The super phosphate is a mixture of calcium phosphate and calcium sulfate. Can you tell me whether any of these things would cause dysuria? Also tell me the hazards of the fertilizer industry and means to prevent them if any.

H S EVERETT M D St. Stephen N B

ANSWER—Chemical fertilizer has long been regarded as a prolific source of occupational diseases. Among other agents that are associated with some branches of this industry, injury has been caused by ammonia hydrogen arsenide ("arsine"), benzene, carbon dioxide cyanamides cyanogen compounds, hydrochloric acid hydrofluoric acid lead compounds, manganese compounds nitrates and nitrites or their acids certain phosphorus compounds sulfates, sulfur dioxide hydrogen sulfate, sulfuric acid silica and silicates.

Ordinarily it is preferable to regard most of the occupational diseases arising in fertilizer manufacture as products of mixed

intoxicants. Several of the substances mentioned are capable of inducing inflammation of the respiratory tract. A smaller number may be regarded as irritants of the urinary bladder. Calcium cyanamide, for example, is one of the substances that may produce disorders of the respiratory tract. If benzene or benzine is used for the defatting of organic materials, the vapors may give rise to bladder inflammation. Extensive exposure to various mineral acids may occasion a highly acid urine, with subsequent bladder irritation. Alcohol apparently plays a distinct part in intoxications from calcium cyanamide. When calcium cyanamide dust is inhaled, symptoms are said not to appear until some alcoholic beverage is taken, the amount being unimportant. The duration of the attack depends in some measure on the amount of alcohol imbibed. A few hours' exposure in a fertilizer plant associated with intake of alcohol may make a workman vulnerable to a cyanamide poisoning attack. Nondrinkers are not involved. So different are the chemicals used in varied fertilizer plants, and so numerous are the possible intoxicants, that it is not possible to furnish in this answer adequate information indicating protective measures. In the International Labor Office publication entitled "Occupation and Health," one section, devoted to fertilizers, contains some data on protective measures. In general, protection is to be found through installation and maintenance of ventilating and exhaust systems for protection against gases, vapors and dust, through the wearing of respirators in some cases for protection against dusts, by the use of protective garments for warding off bacterial invasion and skin diseases, and through strict avoidance of alcoholic beverages by workers in plants in which cyanamide is used.

#### COTTON DYES AND POLYNEURITIS

To the Editor—I have a patient, a white woman aged 34 about 5 feet 7 inches (170 cm) tall, weighing 90 pounds (41 Kg), whom I saw for the first time about five days ago. She states that she has always been slender but has lost from 35 to 40 pounds (about 17 Kg) since Christmas. Beginning last Christmas there was a feeling of malaise without any particular outstanding symptoms save loss of energy and general aches which however were not severe enough to stop her from working. April 9 she became acutely ill vomited for three days and nights and noticed extreme weakness of all four extremities which in a period of five or ten days became a total paralysis. She thinks that at the onset she had a very high fever. So far as I can determine there was no rigidity of the neck vomiting was not projectile and was accompanied for about twenty four hours by diarrhea and then constipation. At present there is occasional nausea very little headache, no salivation, and extreme pain in all four extremities particularly the legs. She has had no incontinence or retention of either urine or feces at any time. The patient's eyes are rather staring, she is emaciated and the skin is rough over the entire body there are decided trophic changes. The temperature is 98.8 F the pulse rate 120 the blood pressure 114 systolic 90 diastolic and the urine normal. The eyegrounds are not remarkable the pupils are dilated but react both to light and in accommodation. The throat and the mouth are not remarkable there is no line on the gums. The heart is normal save for the fast rate. The chest is not remarkable nor is the abdomen. The pelvis is normal. Both arms are capable of slow wavy motion in all directions but accompanied by a bilateral wrist drop and complete flaccid paralysis of the hands making it impossible for her to move her fingers or feed herself. The lower extremities show complete flaccid paralysis from the hips down. All the reflexes in all the extremities are absent. The Wassermann reaction is negative. The hemoglobin is 90 per cent. Blood smear shows no stippling or abnormality of any cell either red or white. Sensory paralysis is not complete some areas distinguish a pin prick, and heat is felt in most areas. Careful questioning discloses no cases of anterior poliomyelitis anywhere in the surrounding community. There is no possibility of food poisoning. The patient lives on a farm about 15 miles from any town but I find that she has been working on bedspreads for a concern that furnishes the yarn to private individuals and allows them to do the work at home. She did this work at intervals for two or three months preceding the first feeling of malaise and since Christmas or about three months before the acute onset had been working constantly at this occupation. I find that these women are in the habit of moistening this dyed yarn with their mouths. Since seeing this case I recall another patient doing the same type of work who complained of mild pains in all extremities particularly the wrists and who had no demonstrable focus of infection to account for her symptoms. Please furnish me with information as to whether the dye could be responsible for this condition. Any comments or suggestions as to treatment and prognosis would be greatly appreciated. Please omit name.

M D Alabama

ANSWER—Human inclination, as found in the lay mind and sometimes in the medical mind is to attach undue significance to common circumstances in the living environment as causes of disease states. It is scarcely believable that the dyes found in cotton yarns might bring about the profound polyneuritis described in this query. Aniline dyes in their finished state are usually without harmful properties. There are a few exceptions. Diamine dyes such as are still frequently used in coloring hair are dangerous substances. A few persons are

prone to become sensitized to the action of various dyes, but such sensitivity usually manifests itself through dermatoses or asthmatic reaction rather than through such severe disturbances as described in this query. In the manufacture of dye substances many intermediate materials are exceedingly dangerous, but these harmful agents are nearly always removed or altered prior to the attainment of the finished product. The query indicates that these dyed yarns may be moistened in the mouth. So far as known, this practice is limited to the wetting of an occasional end of the thread or yarn in order to push through an eyelet. It is not understood that any general wetting of the yarn takes place through contact with the mouth. The stand is therefore taken that from the information now in hand it is not possible to accept any probability that the dyes as described caused the severe neurologic condition indicated. Schwartz (Dermatitis in the Synthetic Dye Industry, *Pub Health Rep* 49 1176 [Oct 5] 1934) says "By far the greater number of finished dyes are innocuous, but the following have been known to cause dermatitis." He then cites a list of twenty-five dyes, including bismarck brown, hydron blue, methyl violet, orange Y and victoria green. Later in the same paper he says "An excessive amount of papillomata and carcinoma of the bladder has been noted among workers in synthetic dyes." Various substances—aniiline, benzidine, toluene, dinitrophenol, beta-naphthylamine—have been blamed as causative agents. In the present instance it is believed that a careful neurologic examination may establish an ultimate cause of this apart from the use of cotton yarns in consignment work at home.

#### POISONING FROM PAINT

*To the Editor*—A man was applying paint with a brush to steel bars. After he had worked five days a dermatitis developed between the fingers of his hands and from the tops of his shoes spreading over the entire body within about four weeks. The man had not previously worked with paint. The paint contained lead chromate 25 per cent ferric oxide 23 per cent and silica 52 per cent and was in a vehicle consisting of processed linseed oil and tung oil 75 per cent oil drier 10 per cent and mineral spirit 15 per cent. An analysis of the paint from the man's clothing showed no arsenic. The dermatitis exfoliated and was followed by vomiting and pain in the abdomen. He vomited red blood from the throat and stomach apparently he had spasmodic fits of gagging and vomiting there was alternate constipation and diarrhea with much mucus and bile the man was rational practically all the time he had a peripheral neuritis two thirds the distance of the arms to the tips of the fingers and two thirds the distance of the legs to the tips of the toes. Early in his affliction he began to lose his grip and sensation of touch and his wrists dropped. There was no lead line around the gums there was some optic neuritis a spinal puncture showed nothing abnormal and the blood count and the urinalysis showed no lead or arsenic. The man contracted the dermatitis June 5 and died about Aug. 12 1934. An autopsy was held but no tests were made of the liver skin or other glands for lead or arsenic. Hair from the body was delivered to a chemist who made the Reinsch test and the Gutzeit test on the hair and found that the hair contained 0.8 mg. of arsenic in 100 Gm. of hair. It was positive for arsenic and the controls were negative. In the Reinsch test it was positive for arsenic and microscopic examination of sublimates was indicative but not entirely conclusive. The chemist stated that the hair contained approximately ten times as much arsenic as is found in normal hair. I cannot say and nobody seems to know whether or not the hair was washed before it was tested. The attending physicians state that the clinical picture was that of arsenical poisoning but in view of the fact that all the tests for lead and arsenic produced nothing positive as to either of these poisons they were not certain and could not make a diagnosis but at the present time they are very much influenced by the finding of the arsenic in the hair. The paint contained lead and tung oil and it seems that nobody knows very much about the poison in tung oil. Have you any literature or any information that would help in a discussion of the matter and with the doctors who attended the man? In view of the fact that the man apparently did not handle arsenic it would seem that he was poisoned from the lead or from the tung oil. Queries to the state department of health and the United States Public Health Service have received courteous answers but no real information.

M.D.

*ANSWER*—Tung oil has been used in varnishes and paints for many years and has never been classified as an industrial hazard. No cases have been reported to our knowledge from its use in paint. It is obtained from the seeds of aleurites and has been applied to the skin in certain cases. Taken internally it may act as a cathartic and emetic. It is not volatile. Lead chromate can produce lead poisoning. The chromate radical is probably set free in the body and may cause systemic symptoms and dermatosis in very rare cases. The patient may sweat profusely and show marked tenderness of the muscles. The wrist drop may be due to the action of lead. In that case lead should have been found in the urine and stippled cells in the blood.

The necropsy should have revealed a damaged liver with areas of necrosis if the arsenical poisoning was severe enough

to cause the symptoms reported. The presence of arsenic in the hair is of no diagnostic value. Part of the patient's trouble may have rested in his inexperience and he may have broken the skin between his fingers, allowing the ingredients of the paint to come in contact with the abrasions. This might possibly have caused him to become susceptible to some of the ingredients of the paint. It is improbable that he could have inhaled enough of the ingredients of the paint to cause his symptoms inside five days.

This case would require more information as to the necropsy and impurities in the paint as well as to the manner in which the patient worked to justify any conclusion as to the cause of death.

#### PREVENTION OF EXPLOSION IN USING ETHYLENE

*To the Editor*—I have recently been asked as to the advisability of using portable shock proof radiographic and fluoroscopic equipment in the operating room when ethylene is being used as the anesthetic agent. The operating room in question is considered safe in that the operating table and floor are all metal equipment and electrical connections are grounded, and there is adequate provision for grounding the x-ray equipment if it should be used. It is my own opinion that in spite of the shock proof nature of the equipment there is still danger in its use under these conditions but I know of no recent authentic data and would appreciate your opinion.

M.D., Illinois.

*ANSWER*—There need be no fear, provided the apparatus is properly designed. If the sparking parts or such parts as are likely to give trouble are protected properly (e.g., under oil) there is no danger. If provided, furthermore, with a mercury switch or a bellows foot switch, the utmost safety is assured when using either ethylene-oxygen, nitrous oxide-ether or ether through a vaporizing device. Professor Hodges of the Billings Hospital, University of Chicago, has recently devised such an "ensemble."

#### UNILATERAL EDEMA

*To the Editor*—A girl aged 13 months admitted to a hospital because of swelling of the left side of the body, of one day's duration developed mumps about one week before. Concomitant with this she had a severe cough slightly productive in character. The night previous to admission her mother noticed that her left eye the left side of her neck, the left arm and the left leg appeared swollen. The mother stated that the child had a slight fever and was restless during the night. The past history revealed no previous illnesses and was essentially negative. Physical examination on admission showed edema of the left eyelid, left nasopharynx, left arm and leg and consolidation in the left lung. Recent examination the day of admission revealed lobar pneumonia of the left lung accompanied by some fluid which was probably both free and encapsulated in the left pleural cavity. The trachea was not displaced, and no abnormality of the spine was seen. Blood count showed leukocytosis to the extent of 17,000 white blood cells 83 per cent polymorphonuclears 10 per cent large mononuclears and 7 per cent small mononuclears. The temperature on admission was 102° F. While the child was in the hospital the temperature pulse and respiration rose progressively daily and the child kept her head retracted and seemed more comfortable in that position. Two days after admission a rib resection was done. Frank pus was found. Third day after admission the child died. The temperature chart showed progressive rise from 102 on admission to 106 at death. Autopsy was negative except for the following. The thorax showed considerable edema and enlargement of the anterior and middle mediastinum. This edema and swelling extended upward along the arch of the aorta especially on the left side, and involved the thymus which was pale in appearance but not particularly enlarged. The left thoracic cavity was plastered on its whole wall by a thick, purulent exudate which also covered the diaphragm. There were no adhesions found nor free fluid or pus in the thoracic cavity. The left lung showed a wedge shaped infarct in the upper lobe and a pneumonia in the lower lobe. I would appreciate it if you would state your theories as to the cause of this edema and why it should be localized to the left side of the body. Our diagnosis was pneumonia accompanying mediastinitis and empyema. Please omit name.

M.D. Connecticut.

*ANSWER*—In considering the answer to the questions raised, the first reaction is one of regretful wonder why the extent and nature of the edema and the appearance of the edematous parts, before as well as after death, are not described more fully also, why the extent and the objective results of the necropsy are not recorded in detail. While it is not possible to explain a truly unilateral edema on the basis of the information at hand the clinical history and the report of the necropsy, incomplete as they are, contain indications that it may have been a case of secondary infection, possible in mumps. The edema and the pulmonary infection appear to have developed during or shortly after an attack of mumps. The infarct in the upper left lobe points directly to embolism. Perhaps the pneumonia in the left lower lobe was embolic in origin and gave rise to suppurative pleuritis, from which in turn developed acute mediastinitis. But where was the primary



focus? The edema of the left eyelid and of the left nasopharynx suggest the possibility of a thrombophlebotic process on the left side of the neck, which might have had its starting point in a parotitis. The subsequent retraction of the head might have been due to meningeal involvement. The exact situation cannot be known however, because the necropsy is silent on the structures of the neck, on the brain and its membranes and on the veins of the extremities.

#### LOSS OF WEIGHT DURING NIGHT

*To the Editor*—A man aged 61 loses 3 pounds (1,360 Gm.) each night. He weighs stripped just before going to bed. He weighs again on arising in the morning before he has urinated or bathed. I have been treating him clinically for osteoarthritis and hypothyroidism. He takes 2 grains (0.13 Gm.) of thyroid each morning at breakfast but has taken no other drugs as his arthritis is of a mild type. I am at a loss to explain his loss of weight during the night. He does urinate once during the night but I am sure that the weight of the urine would not be 3 pounds and being hypothyroid he hardly ever perspires. Please omit name and address.

M D Georgia

*ANSWER*—Loss of weight during the night is a normal phenomenon and, in this patient, consists of two factors (1) insensible loss of weight and (2) urination.

Insensible loss of weight has been thoroughly studied in the last few years by Newburgh and his associates and others. It can be roughly regarded as the amount of water evaporated from the skin and lungs (not including frank perspiration) plus the amount of carbon dioxide exhaled minus the amount of oxygen retained. This loss of weight, in the absence of muscular work, is proportional to the total energy expenditure of the individual. In normal adults it varies from 1,000 to 1,500 Gm. daily. The administration of thyroid to this patient may be causing a metabolism higher than normal and therefore a greater insensible weight loss. But even at the normal level of metabolism the loss of weight during the night due to this factor might be about 600 Gm., or 1½ pounds.

The normal adult excretes as much as 600 cc. of urine during the night hours. This patient being 61 years old and having perhaps some impairment of kidney function, excretes at least 600 cc., probably more. This means a loss of another 1½ pounds in weight.

The total estimated weight loss due to these two factors 2½ pounds (1,210 Gm.), is sufficiently close to the weight loss observed to obviate the assumption of any abnormality.

#### VENOPLASTIC DISORDERS AND RAYNAUD'S DISEASE

*To the Editor*—I have under my charge a young man a college athlete, who does a great deal of rowing but who complains that when his hands get wet or cold they become blanched from the metacarpal joints to the finger tips. There is a tendency in other members of the family for the hands and fingers to become slightly cyanosed when subjected to cold. This young man appears in perfect health and shows no abnormal changes in the chest cavity and no cervical rib or other obstruction to circulation. I should like to be advised as to the proper method of handling this case. Please withhold my name.

M D Massachusetts

*ANSWER*—Blanching of the digits from cold represents a vasospastic disorder. This may be primary as observed in Raynaud's disease, or secondary as a result of organic disease of the digital arteries, neuritis, scleroderma and other organic conditions. Raynaud's disease is rare among the male sex, the incidence being about 9:1 in favor of the female sex. Many vasospastic disorders that affect males subsequently have proved to be thromboangiitis obliterans (Buerger's disease). The pulsations in the ulnar and radial arteries should be observed from time to time. If the condition is thromboangiitis obliterans one or both of these vessels are likely to be occluded. An arteriogram frequently is necessary to determine occlusion of the arteries distal to those palpable at the wrist. Scleroderma should be suspected and the condition of the skin should be noted for edema, slight stiffness or loss of elasticity in the skin. Treatment of a vasospastic disorder depends on the primary cause. If it is Raynaud's disease and if it has progressed to the point at which it has produced some disability, a cervicothoracic ganglionectomy is advisable. If thromboangiitis obliterans is eventually diagnosed prophylactic care of the fingers, protection from cold and trauma and measures to increase circulation may prevent trophic disturbances. If these supervene more active forms of treatment to increase the circulation are indicated. Cervicothoracic ganglionectomy is beneficial in cases of thromboangiitis obliterans in which the disease has progressed so far that there are ulcers or gangrene. In some cases thromboangiitis obliterans does not progress or cause disability and needs no special form of treatment. It is

important not to create an anxiety neurosis, which frequently develops because of the rather alarming appearance of the digits when blanched.

#### AMERICAN COLLEGE OF PHYSICAL THERAPY

*To the Editor*—Please tell me something about the American College of Physical Therapy. The enclosed announcement of short courses in physical therapy for physicians was received a few days ago.

M D Indiana

*ANSWER*—The American College of Physical Therapy, 5 North Wabash Avenue, Chicago, is an organization owned by laymen, which has for its main function the training of technicians in massage, electrotherapy, colon therapy, physical therapy and so on. Its present postgraduate faculty is made up of physicians who are not members of the Chicago Medical Society or Fellows of the American Medical Association.

There is no evidence available that the faculty members possess any particular skill in these various fields. The courses mentioned are of less than one day's duration.

The Council on Physical Therapy prepared an article for *THE JOURNAL*, Sept. 23, 1933, page 999, which stated that "one may be justified in assuming that the background of such an institution as the American College of Physical Therapy is more commercial than educational. Certainly one would hesitate to regard it as a reliable place in which to receive instruction in physical therapy. Of course, the 'College' has not been approved by the Council on Medical Education and Hospitals of the American Medical Association."

#### SENSITIVITY TO IODIDES

*To the Editor*—I have a patient who has a fungous infection of his throat and was advised to use iodides. This medication is the only form that has given him relief. However he has of late been very sensitive to iodides (all common preparations). Can you suggest some preparation (iodide) he can try? Kindly omit name.

M D New Jersey

*ANSWER*—The patient may possibly tolerate better an organic iodide such as calcium iodobenzenate, also known as Caloben or Sajodin, an insoluble, almost tasteless substance, best prescribed in powder form, that may be given in doses of from 0.5 to 1 Gm. three times daily.

#### SYMMETRICAL FAT ON ANKLES AND LEGS

*To the Editor*—A white woman aged 20, 63½ inches (160 cm.) in height weighing 128 pounds (58 Kg.) has consulted me concerning the reduction of diffuse areas of fat symmetrically located on the ankles and knees. Her general physical examination as well as roentgenograms of the lower extremities reveal no pathologic changes. Please outline a method for the reduction of this fat.

M D New York

*ANSWER*—It would be necessary to examine the patient in order to satisfy oneself that the areas symmetrically located on the ankles and knees are truly areas of fat. If they are fat, the suggestion is that they are lipomas, in which case the only way that they can be removed effectively will be by operation. The fat in lipomas seems to be unusually stable so that general reduction methods are ineffective so far as such a fat tumor is concerned.

#### POLLEN CONTENT OF AIR IN MICHIGAN

*To the Editor*—In *THE JOURNAL*, April 13, 1935, page 1309 appeared a tentative answer to a question from Dr. E. O. Glere of Minneapolis with regard to the pollen content of the air in Alpena, Mich. Aug. 3, 1935, page 387. *THE JOURNAL* published a comment by Dr. E. S. Parmenter of Alpena, Mich., who quoted Weather Bureau statistics on prevailing wind directions in Alpena and concluded that the amount of ragweed pollen in the air at Alpena must be very small.

I am now able to furnish pollen figures for Alpena for the ragweed season of 1935. Slides were exposed as usual at the U. S. Weather Bureau station. The total number of ragweed pollen granules falling on the unit area of the slides (18 sq. cm.) during the fifty-two days from August 10 to September 30 was 1,124. This is considerably more than the average total found during the past two ragweed seasons at Petoskey, St. Ignace or Sault Ste. Marie. The daily fluctuation of atmospheric contamination at Alpena followed very closely the fluctuations at Petoskey and St. Ignace, showing that the weather conditions causing atmospheric contamination in the northern end of the Michigan peninsula were general rather than local. The day of highest pollen concentration was September 10. On this particular day the prevailing winds at Alpena were from the northwest but from the study of general weather conditions on that day it seems quite evident that the pollen came from Wisconsin and was blown around or across the upper end of Lake Michigan.

In general the days of heaviest concentration were those on which the wind was from a southerly direction. The ragweed hay fever season of 1935 in northern Michigan consisted of seven distinct waves of pollen blown from downstate or from the west shore of Lake Michigan.

O. C. DERRMAN, North Chicago, Ill.

Medical Examinations and Licensure

COMING EXAMINATIONS

ALASKA Juneau March 3 Sec Dr W W Council Juneau

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY *Written examination for Group B applicants will be held in various cities throughout the country March 14 Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston.*

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY *Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Applications must be filed not later than February 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo, May 11 12 Applications must be received not later than April 1 Sec Dr Paul Titus 1015 Highland Bldg Pittsburgh (6)*

AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo May 11 and New York Oct. *All applications and case reports must be filed sixty days before date of examination Asst. Sec Dr Thomas D Allen 122 S Michigan Ave Chicago*

AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City, Mo May 9 Sec, Dr W P Wherry 1500 Medical Arts Bldg Omaha

AMERICAN BOARD OF PEDIATRICS Kansas City Mo May 9 Sec Dr C A. Aldrich 723 Elm St Winnetka Ill

AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8 10 Sec Dr B R Kirklm Mayo Clinic, Rochester Minn

CONNECTICUT *Basic Science* New Haven Feb 8 *Prerequisite to license examination* Address State Board of Healing Arts 1895 Yale Station New Haven

ILLINOIS Chicago Jan 28 30 Superintendent of Registration, Department of Registration and Education Mr Homer J Byrd Springfield.

IOWA Des Moines Feb 25 27 Dir Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines

MINNESOTA Minneapolis Jan. 21 23 Sec Dr Julian F Du Bois 350 St Peter St St. Paul

NATIONAL BOARD OF MEDICAL EXAMINERS *Parts I and II* Feb 12 14 May 6-8 June 22 24 and Sept. 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia

NEVADA *Reciprocity* Carson City Feb 3 Sec, Dr Edward E Hamer Carson City

NEW YORK Albany Buffalo New York and Syracuse Jan. 27 30 Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany

PUERTO RICO San Juan, March 3 Sec Dr O Costa Mandry Box 536 San Juan

SOUTH DAKOTA Pierre Jan 21 22 Dir Division of Medical Licensure Dr Park B Jenkins Pierre.

VERMONT Burlington Feb 12 Sec. Board of Medical Registration Dr W Scott Nay Underhill

WYOMING Cheyenne, Feb 10-11 Sec, Dr G M Anderson Capitol Bldg, Cheyenne

Colorado October Report

Dr Harvey W Snyder, secretary, Colorado State Board of Medical Examiners, reports the written examination held in Denver, Oct. 2-4, 1935 The examination covered 8 subjects and included 80 questions An average of 75 per cent was required to pass One candidate was examined and passed Twelve physicians were licensed by endorsement. The following schools were represented

| PASSED   |                         | Per Cent                  |
|--|-------------------------|---------------------------|
| Osteopath*                                     |                         | 85 1                      |
| School   | LICENSED BY ENDORSEMENT | Year Endorsement Grad. of |
| Medical College of Alabama                     |                         | (1900) Alabama            |
| College of Medical Evangelists                 |                         | (1933) California         |
| University of Colorado School of Medicine      |                         | (1934) N B M Ex           |
| Northwestern University Medical School         |                         | (1910) Illinois           |
| University of Illinois College of Medicine     |                         | (1930) Illinois           |
| University of Kansas School of Medicine        |                         | (1926) Kansas             |
| Barnes Medical College                         |                         | (1906) Kansas             |
| Washington University School of Medicine       |                         | (1924) Missouri           |
| Creighton University School of Medicine        |                         | (1928) Nebraska           |
| University of Nebraska College of Medicine     |                         | (1928) Nebraska           |
| Hahnemann Med College and Hosp of Philadelphia |                         | (1931) Kentucky           |
| Marquette University School of Medicine        |                         | (1927) Wisconsin          |

\* Licensed to practice medicine and surgery

West Virginia October Report

Dr Arthur E McClue, State Health Commissioner, reports the oral and written examination held in Huntington, Oct 28-30 1935 The examination covered eleven subjects and included 110 questions An average of 80 per cent was required to pass Eight candidates were examined all of whom passed Twelve physicians were licensed by reciprocity The following schools were represented

| School                                  | PASSED | Year Grad. | Per Cent |
|---|--------|------------|----------|
| Rush Medical College                    |        | (1931)     | 86 3     |
| Indiana University School of Medicine   |        | (1932)     | 84 9     |
| University of Kansas School of Medicine |        | (1934)     | 83 4     |

|   |        |      |
|---|--------|------|
| Tofts College Medical School                  | (1932) | 88 5 |
| University of Cincinnati College of Medicine  | (1935) | 86   |
| University of Pennsylvania School of Medicine | (1933) | 84 8 |
| Medical College of Virginia                   | (1934) | 86 3 |
| University of Virginia Department of Medicine | (1934) | 86 1 |

| School  | LICENSED BY RECIPROCITY | Year Grad.      | Reciprocity with |
|---|-------------------------|-----------------|------------------|
| George Washington University School of Medicine |                         | (1931)          | Dist. Colum.     |
| Rush Medical College                            |                         | (1934)          | Illinois         |
| Johns Hopkins University School of Medicine     | (1924)                  | Idaho, Maryland |                  |
| St Louis University School of Medicine          |                         | (1933)          | Missouri         |
| University of Cincinnati College of Medicine    |                         | (1933)          | Ohio             |
| Jefferson Medical College of Philadelphia       | (1922)                  | Ohio            | S Carolina       |
| University of Pennsylvania School of Medicine   |                         | (1931)          | Penna.           |
| Medical College of Virginia                     | (1932)                  | (1933)          | Virginia         |
| University of Virginia Department of Medicine   |                         | (1934)          | Virginia         |

Indiana June Examination

Dr William R Davidson, secretary, Indiana State Board of Medical Registration and Examination, reports the written examination held in Indianapolis, June 25 27, 1935 The examination covered 15 subjects and included 100 questions One hundred and fifteen physicians were examined, 111 of whom passed and 4 failed The following schools were represented

| School   | PASSED | Year Grad.       | Per Cent    |
|--|--------|------------------|-------------|
| Loyola University School of Medicine   |        | (1935)           | 81.5 * 81.5 |
| Northwestern University Medical School   | (1935) | 807 81.3 * 85.3* |             |
| Rush Medical College   |        | (1935)           | 87.7*       |
| Indiana University School of Medicine  |        | (1934)           | 83.7        |
| (1935) 78.8 78.9 78.9 79 79.1 79.3 † 79.8 79.8   |        |                  |             |
| 79.9 80 80.2 80.2 80.3 80.3 80.4 80.5 80.5 80.5  |        |                  |             |
| 80.7 80.7 80.9 † 80.9 80.9 81.1 81.1 81.2 81.3   |        |                  |             |
| 81.3 81.3 81.5 81.5, 81.6 81.7 82 82 82.1 82.1   |        |                  |             |
| 82.1 82.1 82.1 82.2 82.3 82.3 82.3 82.3 82.4   |        |                  |             |
| 82.5 † 82.5 82.5 82.6 † 82.6 82.6 82.7 82.7  |        |                  |             |
| 82.8 82.9 82.9 83 83 83.1 83.1 83.2 83.3 83.3  |        |                  |             |
| 83.3 83.3 83.4 83.4 83.4 83.5 83.6 83.6 83.6   |        |                  |             |
| 84 84.1 84.2 84.2 84.3 84.4 84.4 84.5 84.7 84.7  |        |                  |             |
| 85 85.1 85.1 85.2 85.3 † 85.9 86.8   |        |                  |             |
| State University of Iowa College of Medicine   |        | (1934)           | 83.3        |
| University of Louisville School of Medicine  |        | (1935)           | 89          |
| University of Minnesota Medical School   |        | (1932)           | 83.8        |
| Creighton University School of Medicine  |        | (1935)           | 9.7         |
| New York Homeopathic Medical College and Flower Hospital   |        | (1935)           | 9.6         |
| Eclectic Medical College Cincinnati  |        | (1935)           | 83.9        |
| Jefferson Medical College of Philadelphia  |        | (1935)           | 81.8 85.2   |
| University of Pennsylvania School of Medicine  |        | (1935)           | 83.4        |
| Licentiate of the Royal College of Physicians and of the Royal College of Surgeons Edinburgh and of the Royal Faculty of Physicians and Surgeons Glasgow | (1934) |                  | 83.7        |

| School   | FAILED | Year Grad. |
|--|--------|------------|
| Loyola University School of Medicine   |        | (1935) †   |
| Indiana University School of Medicine  |        | (1935)     |
| University of Manitoba Faculty of Medicine                                   |        | (1979)     |
| Universitatea Regele Ferdinand I din Cluj Facultatea de Medicină și Farmacie |        | (1933) †   |

\* This applicant has completed the medical course and will receive his M D degree on completion of internship License has not been issued.

† This applicant will receive the M D degree in June 1936 License has not been issued

‡ This applicant has completed the medical course and will receive his M D degree on completion of internship

§ Verification of graduation in process

Arizona October Report

Dr J H Patterson, secretary, Arizona Board of Medical Examiners, reports the written examination held at Phoenix, Oct 1-2, 1935 The examination covered 10 subjects and included 100 questions An average of 75 per cent was required to pass Five candidates were examined, 4 of whom passed and 1 failed Four physicians were licensed by reciprocity and 2 physicians were licensed by endorsement The following schools were represented

| School   | PASSED | Year Grad. | Per Cent |
|--|--------|------------|----------|
| George Washington University School of Medicine          | (1934) | 76.1       | 79.2     |
| School of Med of the Division of the Biological Sciences | (1935) |            | 78.6     |
| University of Oregon Medical School                      | (1934) |            | 80       |

| School   | FAILED | Year Grad. | Per Cent |
|--|--------|------------|----------|
| University of Southern California School of Medicine | (1935) |            | 71.9     |

| School  | LICENSED BY RECIPROCITY | Year Grad. | Reciprocity with |
|---|-------------------------|------------|------------------|
| Tulane University of Louisiana School of Medicine | (1921)                  | Tennessee  |                  |
| Univ of Michigan Medical School (1929)            | (1932)                  | Penna      |                  |
| Baylor University College of Medicine             | (1931)                  | Texas      |                  |

| School                         | LICENSED BY ENDORSEMENT | Year Endorsement Grad. | of |
|--------------------------------|-------------------------|------------------------|----|
| College of Medical Evangelists | (1935 2)                | N B M Ex.              |    |

## Book Notices

**A Text Book of Fractures and Dislocations Covering Their Pathology, Diagnosis and Treatment.** By Kellogg Speed S.B. M.D. F.A.C.S. Professor of Clinical Surgery Rush Medical College of the University of Chicago. Third edition. Cloth. Price \$11. Pp 1 000 with 1 042 illustrations. Philadelphia: Lea & Febiger 1935.

This standard textbook on fractures and dislocations for the general practitioner was written by a man of large experience at Cook County Hospital and a member of the fracture committees of the American College of Surgeons and the American Medical Association. Fractures incidental to industry and domestic life have gradually diminished in proportion to the present preponderating ratio of these injuries sustained from automobile accidents. In the United States the number of individuals injured per annum by the automobile has been about 1 000 000, while the deaths from such causes have been more than 30 000. The standard of care has been raised by efforts of the various medical organizations and the necessity of obtaining results satisfactory to the patient. Hospitals likewise have been forced to raise their standards of care. Even in remote districts there is a rapidly spreading knowledge of the modern treatment of fractures supplemented by mechanical apparatus to carry it out. Progress has been stimulated by the influx of young men recently taught the subject in medical schools. When all patients are given proper first aid and reach the doctor or hospital already splinted gross deformities and most of the pain have already disappeared. The exact type of fracture should be determined from the history and the examination. Local complications must not be overlooked. If further transportation to another place or hospital is necessary, the immediate dressing should be one that fixes the limb in the best position obtainable after gentle efforts at reduction or straightening it.

In every traumatic injury in which fracture or dislocation is suspected roentgen examination should be used. From the medicolegal standpoint a roentgenogram carries great weight. The influence on treatment is also far reaching. One should know the relative position of the fragments in every fracture both before and after attempts at reduction. This knowledge may lead to repeated attempts to better the displacement and bring about a more favorable final result.

Coxa valga may occur after fracture of the neck of the femur. In coxa valga the limb is abducted with external rotation and limitation of adduction, the hip joint is painful and the gait is rolling and unsteady with a limp, the trunk being inclined toward the affected side. The striking symptom is a lengthening of the limb of from 2 to 3 cm. Treatment advised by the author consists in fixing the limb in plaster in adduction or performing cuneiform osteotomy at the neck, to straighten it. Many surgeons strive to obtain coxa valga.

The volume does not contain any discussion of callus formations and bony union or a description of Shenton's line, Skinner's line or Leadbetter's method of treating fracture of the neck of the femur. No reference to phosphatase appears in the index. The statement is made that Sayre's adhesive tape dressing for fracture of the clavicle is satisfactory routine treatment of fracture of the clavicle in adults, though many modern surgeons refuse to employ this method.

**Chronic Nasal Sinusitis and Its Relation to Mental Disorder. An Applied Pathology of Abnormal Conditions of the Nasal Sinuses Found in Mental Hospital Patients.** By F. A. Lickworth B.Sc. M.R.C.S. Director Joint Board of Research for Mental Disease City and University of Birmingham. Cloth. Price 16s. Pp 136 with 83 illustrations. London: H. K. Lewis & Co. Ltd. 1935.

The author concerns himself in this work with a detailed discussion of a topic often underappreciated by rhinologists, namely, the relationship between chronic suppuration in the accessory nasal sinuses to mental disorders. He makes clear with a wealth of data obtained from clinical examination and postmortem evidence how frequently in the insane disease conditions may be found in these chambers so closely placed to the contents of the cranial cavity. There is sober consideration of the types of sinusitis found in these cases and manner in which the brain and its function may be disturbed. It is a fair

conclusion that many times unsuspected sinus disease may be the overlooked cause of the patient's disabilities and there is in the author's work and in the observation of others enough reliable evidence to confirm his thesis. Rhinologists and psychiatrists both would do well to acquaint themselves with this careful study, an awareness of the implications involved would undoubtedly aid more than one suffering, for instance, from loss of memory, melancholia and even suicidal tendencies.

**The Diagnosis and Treatment of Variations in Blood Pressure and Nephritis.** By Herman O. Mosenthal M.D. Professor of Medicine and Attending Physician New-York Post Graduate Medical School and Hospital New York N.Y. [Reprinting of Oxford Monograph Vol. VII The Diagnosis etc.] Cloth. Price \$9. Pp 618 with 7 illustrations. New York: Oxford University Press 1931.

This is not a new book or even a new edition. It is a new binding of the printed sheets of the seventh volume of the series of loose-leaf monographs on diagnosis and treatment, which appeared in 1930 under the editorship of Dr. Henry A. Christian. The pages are identical with those of a copy of the original volume from the set of ten volumes, the hole for the loose-leaf binder is apparent despite the new and more conventional binding. There is much that is highly commendable in this brief and most readable monograph. It is not as large as suggested by the number of pages, for the type is unusually large and the spacing most liberal. The discussion of the diagnosis and treatment of nephritis is scientifically far better than the discussion of hypertension. In delineating the normal mechanism of renal secretion, Mosenthal follows closely the concepts of Richards and almost wholly ignores tubular secretion. The discussion of the methods of studying the renal function in Bright's disease reveals Mosenthal's clarity of thought and rational attitude but suffers from the fact that in the five years since the publication of the book many significant data have come to light. In some 400 references to the literature which were carefully inspected, there were but three or four as recent as 1931, the literature of the nineteen twenties is adequately reviewed. The chapters on hypertensive disease are even more obviously out of date. It is suggested that arteriolar constriction is a compensatory mechanism to protect the capillaries from excessive active hyperemia and that hypertension is due to increased resistance in the larger vessels proximal to the arterioles. Such a concept is grossly at variance with the present ideas of circulatory dynamics. Prognosis received less than three pages of consideration. In view of the title of the work the discussion of treatment is inadequate—a short sketch and enumeration of the various methods of therapeutic attack, but almost no critical discussion. The section on diet is admirable and emphatically stresses the necessity for a sane, well-balanced dietary. In summation it may be said that Mosenthal's views are well worth studying by those with special interest in these related problems, but the book fails to fulfil the promise of its title. Medical progress has become so rapid that a book five years old is already somewhat behind the times.

**Roots of Crime. Psychoanalytic Studies.** By Franz Alexander M.D. Institute for Psychoanalysis Chicago and William Healy M.D. Judge Baker Guidance Center Boston. Cloth. Price \$3. Pp 304. New York & London: Alfred A. Knopf 1935.

This volume is based largely on actual psychoanalyses of offenders carried out by the first named author in the Judge Baker Guidance Center, with which Dr. Healy is associated. The various chapters deal, therefore, with the records of cases giving first the history of the patient, then the results of the psychoanalysis and the investigations of the patient's dreams. The chapters are variously characterized by figurative terms such as 'The Victim of Loyalty', 'The Undetected Shoplifter',

'A Favorite of Women and Nobody's Son'. In four instances the investigators failed to win cooperation for psychoanalytic study or therapy—three of these were adolescents and the fourth a pronounced schizoid personality. The authors are convinced that investigation of the individual by the psychoanalytic technique brings out much that was not known and could not be known even through good case studies. These factors are dynamic in producing the antisocial trends. They see in the psychoanalytic research method a most useful technique for solving the cases of crime and aiding in its prevention.

**The Radiology of Bones and Joints.** By James F Brallsford M.D. M.R.C.S. Radiological Demonstrator in Living Anatomy The University of Birmingham. Second edition Cloth Price \$9 Pp 571 with 340 illustrations Baltimore William Wood & Company 1935

The first edition of this book was reviewed favorably in these columns about one year ago. Some of the original illustrations have been replaced by roentgenograms of better specimens, and over thirty additional roentgenograms have been included. The chapters dealing with osteochondritis, bone dystrophies and spondylolisthesis have been rewritten. A chapter has been added on dental radiography. The index has been changed so as to enable the reader the more readily to refer to information on specific roentgenographic appearances as well as on classified diseases. Unless he is content to adopt the position of a qualified technician, the details and technic of radiography not only demand a specialist in execution and interpretation but also compel the radiologist to take an active clinical part in scientific medical research, differential diagnosis, treatment and prognosis. The advent of radiography has considerably extended knowledge of the growth, development and structure of the bones and joints in health and in disease. Today the science with its advanced technic graphically provides delicate details of osseous changes that may clinch a diagnosis when clinical signs and symptoms are indefinite. The fascinating study of living bone disorders by the aid of radiography is ever revealing additional features which assist in the diagnosis and treatment of local and systemic disease processes.

**Traitement de l'éclampsie. Technique actuelle du traitement prophylactique.** Par B Stroganoff. Préface de H Vignes. Paper Price 18 francs Pp 111 Paris Masson & Cie 1935

In this little book Stroganoff gives the history of his prophylactic method in eclampsia, the pathogenesis of the disease with the rationale of his treatment, and the results obtained by prophylaxis not only by himself but by obstetricians in various parts of the world. Among 7,344 cases of eclampsia treated by the Stroganoff method and reported by sixty-one different authors, the maternal death rate was 9.7 per cent. In a series of 1,113 Russian cases treated or supervised by Stroganoff, the maternal mortality was only 3.7 per cent and the fetal death rate was 20 per cent. The author points out that his conservative method yields far better results than any form of active therapy of eclampsia. In a group of 1,863 cases of eclampsia Stroganoff approved of cesarean section only twice when eclampsia was the sole indication for the operation. At the end of the book is an outline of the method, the essentials of which are the administration of morphine and chloral under chloroform anesthesia, venesection, delivery by forceps or version and extraction as soon as this may be accomplished without harm to mother or baby, rupture of the membranes if there are no contraindications and the patient is in labor, and stimulation of such vital organs as the kidneys, skin, lungs and heart. The book is well written and is naturally a classic on the prophylaxis of eclampsia, which is at present practiced in one form or another in many parts of the world.

**Child Nutrition on a Low Priced Diet with Special Reference to the Supplementary Value of an Egg a Day the Effect of Adding Orange Juice and of Replacing Egg by Liver.** By Mary Swartz Rose Professor of Nutrition Teachers College Columbia University and Gertrude M. Borgeson Child Development Monographs Number 17 Paper Pp 109 with 24 illustrations New York Bureau of Publications Teachers College Columbia University 1935

Gains and losses in weight in children are often small and there is need for refined standards for judging their growth. Then, too, the growth of all children is affected to a great extent by the diet which they employ. The study presented in this volume was started in October 1923 in an effort to determine what foods had best be made the basis for an economical and yet satisfactory diet. Sixty children were chosen for the study. They were divided into two groups. One group received an egg a day, while the others did not receive this food. The diet was so adjusted that the egg did not increase the total calories in the diet over that of the control group. A constant record was kept of the physical condition of the children, the condition of their teeth, and their weight and growth throughout a period of observation lasting twenty-one months. The study indicates the efficiency of a very inexpensive diet for

young children, but the diet must be chosen with a knowledge of the nutritive value of the foods given. Cereals furnished 30 per cent of the calories, fruits and vegetables 20 per cent, while milk furnished 36 per cent. The milk as a rule was not less than 25 per cent of the total calories. Fats and sugars furnished 13 per cent. Meats and eggs, the most expensive items, furnished only about 3 per cent. A study of this type does much to aid in the improvement of child nutrition.

**The Schoolboy. A Study of His Nutrition Physical Development and Health.** By G E Friend M.R.C.S. L.R.C.P. Medical Officer of Christ's Hospital Horsham. With a foreword by J C Drummond D.Sc., F.I.C., Professor of Biochemistry University College London. Cloth. Price 7s 6d. Pp 128 with 31 illustrations Cambridge W. Heffer & Sons, Ltd 1935

Most studies on nutrition have been carried out on animals, because of the obvious difficulty in making nutritional experiments on human beings. The life span of an animal in comparison with that of the human is short, so that sometimes misleading results are obtained from such work. This book describes some observations made over a period of years, starting in 1913 and terminating in 1933. A record was kept of the food consumption and the types of food eaten during the war and postwar periods. During the war period, deficiencies, such as limitations of the milk supply, butter and meat, occurred. During this time the boys were on a diet that was practically devoid of vitamin D, except for a few individuals who were treated with some form of cod liver oil. And the effects of this deficiency were noticeable in the clinical disturbances that developed. The chief usefulness of this dietetic survey is in its confirmation of many of the facts concerning nutrition which have been presented as the result of animal experimentation. It is hoped that through it improvement in the nutrition of school boys will occur. Those who have the welfare of young persons at heart will find in this little volume a wealth of information.

**The Diseases of Childhood. A Work for the Practising Physician.** Edited by Dr M. Pfaundler Professor of Children's Diseases at the University of Munich and Dr A. Schlossmann Professor of Children's Diseases at the Medical Academy in Düsseldorf. Written by 61 Eminent Pediatric Authorities. English translation by the American Editor in Chief M. G. Peterman Sc.D. A.M. M.D. Professor Department of Pediatrics Marquette University Medical School with the cooperation of 21 American Pediatricists. [Translated from the fourth German edition.] In five volumes. Cloth. Price \$45 per set Pp 544 512 689 575 646 with 1,129 illustrations Philadelphia and London J. B. Lippincott Company 1935

The publishers have made available in five handsome volumes an English translation, well edited, of the famous Pfaundler and Schlossmann system of the diseases of children. Many famous foreign physicians collaborated in producing this monumental work, and now twenty-two well known American physicians have collaborated in preparing a translation of the fourth German edition. They have added comments reflecting American developments in points of view wherever these seemed indicated. The books are handsomely printed on fine enameled stock. The five volumes cover the entire field of pediatrics, beginning with its history and then discussing hygiene, brometry, infant welfare, and pathology. Then come sections on premature infants and additional volumes covering the constitution, deficiency diseases, the diseases of the blood, the infectious diseases and those diseases related to various special systems of the body. The illustrations are of the finest quality of halftone and colored reproductions. Thus this work becomes one of the most complete and satisfactory systems of pediatrics now available.

**Clinical Biochemistry.** By Ivan Maxwell M.D. B.S. M.Sc. Lecturer in Physiology and Clinical Biochemistry University of Melbourne Third edition. Cloth. Pp 297 with 6 illustrations Melbourne W. Ramsay (Surgical) Pty. Ltd. 1935

This is a comprehensive and well organized compilation of various laboratory tests with their clinical applications. It is a valuable aid to the clinician and also to the student and teacher of biochemistry. The treatments of renal efficiency, hepatic efficiency and gastric function are exceptionally thorough. The chapters on acidosis and pancreatic efficiency are not so critical and modern as one might expect. Poor methods for urinary and blood dextrose and for serum calcium, and old and cumbersome methods for blood urea and nonprotein nitro-

gen are recommended. The uric acid methods are not presented critically. The presentation on enzyme methods and reversible reactions could have been more critical. The book contains references to excellent fundamental monographs, papers and reviews. It is well indexed.

**The Obstetric Pelvis** By Herbert Thoms M.D. F.A.C.S. Associate Professor of Obstetrics and Gynecology the School of Medicine Yale University Cloth Price \$2.50 Pp 115 with 50 illustrations. Baltimore: Williams & Wilkins Company 1935

This book was presumably written to prove the author's contention that roentgen pelvimetry should form part of the antepartum examination of every primiparous woman. He emphasizes the inadequacy and often incorrectness of external pelvic mensuration as an index of the size and shape of the pelvic inlet when done with the ordinary pelvimeter. On the other hand, the inlet of the pelvis can be accurately measured by means of roentgenograms. Whereas the author has little faith in the external measurement of the pelvic inlet, he points out the great importance of properly measuring the outlet of the pelvis with an outlet pelvimeter. His own instrument for this purpose has proved highly satisfactory. One chapter is devoted to the author's own technique of pelvic roentgenometry. The procedure is simple, rapid, accurate and adequate for all obstetric purposes. At the end of the book is an extensive bibliography, from which one learns that the author has written twenty articles during the past twenty years on the subject of the obstetric pelvis. The book contains much useful information and should prove helpful not only to specialists in obstetrics but also to general practitioners.

**Incompatibility in Prescriptions and How to Avoid It with a Dictionary of Incompatibilities** By Thomas Stephenson D.Sc. Ph.C. F.R.S.E. Fourth edition Cloth Price 6s Pp 62 Edinburgh: The Prescriber Office 1935

In discussing a recently issued French book on incompatibilities, a reviewer expressed the opinion that a new English book on incompatibilities was just about due. That this was prophetic is evidenced by the appearance of this volume which should be in the library of every prescriber, for even if one has the older books on the subject there are many of the newer and now extensively used drugs that require an up-to-date guide. If one is to find fault—and a critic is, of course supposed to do that—one might express the wish that the "Dictionary of Incompatibilities" were more complete than it is. Whether a really complete dictionary on incompatibilities is possible is another question.

**Biological Politics: An Aid to Clear Thinking** By F. William Iman M.B. Ch.B. Cloth Price \$3 Pp 258 Baltimore: William Wood & Company 1935

There are eleven chapters on different topics e. g., sentiment and reality, the mechanism of inheritance, disease and inheritance, the ascent of man, European races, education. Most of the chapters were prepared originally as lectures and the book is dedicated to "the Wallace Medical Society to whom part of the original paper was read as a presidential address." The general purpose running through the book is to discuss important biologic considerations—man as an animal—in relation to certain modern political theories and practices. The author announces himself as favoring the view that by copying and allowing nature to have her head the greatest happiness of the greatest number can be ultimately secured. No attempt will be made to assess the merits and shortcomings of the discussions in the book, they are, however readable and informative.

**Infections of the Urinary Tract** By T. E. Hammond F.R.C.S. Surgeon The Royal Infirmary Cardiff Cloth Price 10/6 Pp 250 with 6 illustrations London: H. K. Lewis & Co. Ltd. 1935

This book consists of a series of talks to practitioners by the bedside of the patient on the subject of infections of the urinary tract. The author has made an attempt to help them in the problems with which they are confronted. For this reason the book is of some value to the general practitioner. In the discussion the author stresses the practical side of each question, giving considerable space to diagnosis and treatment. The book is divided into nineteen chapters with two appendices. Because the author has put in writing his remarks at the bedside, this little volume has not the orderly arrangement and the completeness of a textbook.

**Awaken Your Sleeping Beauty** By Lilyan Malmstead Cloth Price \$1.75 Pp 96, with illustrations New York: E. P. Dutton & Co. Inc. 1935

The desire to achieve balance, poise, perfection and individuality is a natural urge in the consciousness of all women. "Lengthen the line between the chin and the waist" says Lilyan Malmstead, "and you will lengthen your years." The authoress uses the word "erectitude" to mean not only upright standing but a dynamic posture "which arouses the slumbering beauty and suffuses it through the entire body and face, thus bringing health, confidence and longevity." The writer believes that deliberate forward bending exercises are drastically incorrect and inconsistent, and in order that one may retain poise and proper proportions, one must take the opposite attitudes, namely, backward bending—"nature's corrective." The statement is made that "your toes should touch the floor first and be sure your step is neither too short nor too long, as either will throw the body out of balance and give your walk an awkward appearance." The writer advises against clumsy shoes. A shoe with a short vamp fits higher up into the arch, she states, at the same time giving the foot a graceful appearance. All together, the book is unworthy of serious critical consideration.

**Streamline for Health** By Philip B. Hawk Founder of Food Research Laboratories Inc. Cloth Price \$2.50 Pp 186 with illustrations by David Oser New York & London: Harper & Brothers 1935

To the multiplicity of books heretofore available in this field Dr. Hawk now adds a contribution that is largely personal. It is written in a light vein, illustrated with cartoons and quotations. The author draws heavily on the pages of *THE JOURNAL* for his scientific data concerning reducing nostrums. An appendix gives the usual tables of diets with caloric contents and food values. The book is in general quite sound in the material presented but contains apparently nothing that will produce in those who ought to eat less the necessary will power to do so. This would seem to be the really essential factor involved in any reducing campaign.

**Handbook of Therapy** Edited by Morris Fishbein M.D. Editor Journal American Medical Association Chicago From the Handbook of Therapy By Oliver T. Osborne and Morris Fishbein Tenth edition Imitation leather Price \$2. Pp 765 Chicago: American Medical Association 1935

The alert physician is constantly seeking therapeutic methods that are sound and are attuned to medical progress. For this reason "The Handbook of Therapy" is revised at frequent intervals. The latest revision includes a compilation of the material describing the newer therapeutic methods. Revisions of style and presentation of this material have also been made, so that the various subjects can be easily found. Much subject matter has been added, therapeutic suggestions that are obsolete have been deleted. The therapy of syphilis is not described, but other disorders requiring medical treatment have been included. Material concerning agranulocytic angina and prophylaxis has been added, and the treatment of measles and scarlet fever with convalescent serum is also described. With each revision, the usefulness of this well tried and tested handbook seems to be improved.

**Essentials of Physiological Chemistry** By Arthur K. Anderson Ph.D. Professor of Physiological Chemistry The Pennsylvania State College Cloth Price \$2.75 Pp 257 with 31 illustrations New York: John Wiley & Sons Inc. 1935

As technical sciences related to medicine have developed there has become apparent the need for special textbooks not so complicated and extensive as those used by the medical student. Among the fields in which such textbooks have been needed especially is physiologic chemistry—a field studied by nurses, laboratory technicians, anesthetists, x-ray technicians, and similar workers in medical fields. The volume prepared by Dr. A. K. Anderson has been designed especially for students of this type. It has promptly found a place in teaching and is now generally recommended by teachers in many universities. There are nineteen chapters, discussing the nature of food substances, the processes of digestion, the character of metabolism and examinations of the blood, the urine, the endocrine organs and the vitamins. The illustrations are simple and well designed. The volume can be generally recommended as a most useful textbook in this field.



## Medicolegal

**Dental Practice Acts Practice of Dentistry by Dental College**—The Atlanta Southern Dental College was indicted for illegally practicing dentistry in Georgia. The college demurred to the indictment as a whole and to each count in the indictment. The trial court decided adversely to the college on certain of the demurrers and the case was brought before the court of appeals of Georgia, division 1.

The dental practice act of Georgia provides, in part, that

All persons who shall charge a fee for operations or parts of operations of any kind in the treatment of diseases or lesions of the human teeth mouth gums or jaws or extract teeth or attempt to correct the malposition thereof or who shall fill or crown a human tooth or teeth or do any operation whatsoever on the human tooth or teeth gums or jaws or who shall make examination of any human tooth teeth gums or jaws, or take an impression thereof for the purpose of treating or operating upon the same shall be held to be practicing dentistry

The first count in the indictment charged that the college, a corporation, collected from a named patient a stated sum as payment for a full upper rubber plate and a partial lower rubber plate, prepared for the patient by a dental student in a clinic conducted and maintained by the college, such student not having obtained a license to practice dentistry in the state. The college contended that this count did not charge the doing of any act that would constitute the practice of dentistry within the meaning of the dental practice act, that the preparing or making of an upper and lower rubber plate by a student was not practicing dentistry, unless it was alleged that it was done as a part of the treatment of the teeth, mouth or gums of the patient or that the impression had been made by such student for the purpose of treatment or operating, and that the preparing or making of the plate was a purely mechanical act often done by laboratories for practicing dentists. The trial court erred in overruling the demurrer to this count, said the court of appeals. The count did not charge the doing of any act constituting the practice of dentistry. The making or preparing of an upper or lower plate may be an act purely mechanical which is not per se practicing dentistry. The taking of an impression and the fitting of a plate made from such an impression to the mouth of a particular person may constitute the practice of dentistry, but such acts were not charged in the count.

The second count alleged that the college charged and collected from a named patient a stated sum as payment for repair to an upper partial dental plate, by replacing a broken tooth therein, the service being performed by a student who had not obtained a license to practice dentistry. In the opinion of the court of appeals, the trial court erred again in overruling a demurrer to this count. Repairing a broken tooth in a plate does not constitute the practice of dentistry in Georgia.

The third count charged the college with having collected from a named patient a stated sum as payment for the cleaning of the patient's teeth at the clinic of the corporation, such service being performed by a student who had not obtained a license to practice dentistry. Cleaning teeth, said the court of appeals, does not constitute the practice of dentistry within the meaning of the dental practice act and the trial court erred in overruling the demurrer interposed by the college to this count.

The fourth count charged the dental college with collecting from a named patient a stated sum as payment for the extraction of a tooth, such service being performed by a student who had not obtained his license to practice dentistry. This count said the court, charged an act falling within the statute defining what shall constitute the practice of dentistry, and the trial court committed no error in overruling the demurrer to the count.

The dental practice act of Georgia provides, further, that "No person lawfully authorized to practice dentistry in said State at the time of the passage and adoption of this Act shall be required to obtain any license or additional authority to practice dentistry in said State." The college contended that all the counts in the indictment were deficient in that they did not allege that the persons performing the acts charged in the indictment were not, at the time of the passage of the dental practice act practicing dentistry, and hence authorized by the act to continue to practice without a license. But, said the court of appeals, the dental practice act also provides that on

the trial of any person for alleged violation of the dental practice act, it shall be "incumbent on the defendant upon proof that he practiced dentistry in said State, to show that he had authority under the law to so practice dentistry to exempt himself from the penalty of such violation." The foregoing provision, the court said, makes the having of a license or other authority to practice dentistry at the time of the passage of the act a defensive matter. It was not incumbent on the state to allege or prove that the defendant was not lawfully practicing dentistry at or prior to the passage of the dental practice act. The trial court properly overruled the demurrer to the indictment as a whole.

The judgment of the trial court in overruling the demurrers interposed to counts one, two and three of the indictment was reversed and its ruling on the demurrers to the fourth count and to the indictment as a whole was affirmed.—*Atlanta Southern Dental College v State (Ga)*, 180 S E 620

**Workmen's Compensation Acts Diabetes Mellitus Following Trauma**—As the workman was loading a 250 pound tank into a truck, he slipped and caught its weight in his arms as he was in a bent over position. He felt a strain or soreness through the stomach and across the back, but the soreness seemed to disappear during the day. About a week later he began to be troubled with frequent urination and with extreme hunger and thirst. Within two weeks he had lost 25 pounds in weight. He had to quit work within a month. Later a diagnosis of diabetes mellitus was made. Attributing his condition to the industrial accident, the workman instituted proceedings under the Kansas workmen's compensation act. A decision of the compensation commissioner denying him compensation was reversed by the district court, Chase county, and the employer and his insurance carrier appealed to the Supreme Court of Kansas.

The only question to be determined, said the Supreme Court, is whether or not the accident caused or accelerated diabetes mellitus in the workman to the extent that it disabled him. The only evidence on the matter was the testimony of the workman's physician that it was possible for an injury to the head, spine or pancreas to produce diabetes. In his opinion, it was possible for the strain which the workman underwent to cause the condition but he could not say whether that condition was caused by the injury or by something else. The workman relied on the fact that he was apparently in good condition before the accident and began to be sick soon thereafter. But, said the court, the evidence produced by the claimant tends to prove nothing more than that the accident might have caused his condition. Before a claim for compensation can be sustained there must be substantial competent evidence to support it. Claims cannot be sustained that rest purely on conjecture. The conclusion to be drawn from the evidence here presented answers but little higher than a surmise or conjecture. The court, accordingly, reversed the judgment of the trial court and ordered a judgment entered against the workman.—*Whitaker v Panhandle Eastern Pipe Line Co (Kan)*, 46 P (2d) 862

**Compensation of Physicians Fraudulent Representations as to Ailment and Necessity for Medical Treatment**—Barker brought suit to recover a balance which he alleged was due him for "medical" services rendered to the defendant and her children. The defendant filed a cross-complaint asking, among other things, to recover back \$775 already paid Barker, claiming she had been induced to employ him by his misrepresentation that he was a duly qualified physician and surgeon and misrepresentations as to the physical condition of herself and children. The trial court found that Barker's license to practice medicine was illegally issued to him, since he obtained it from the board of medical examiners of Washington in 1918 on the strength of a diploma from an osteopathic college whereas the then existing law, in effect, required graduation from a college conferring the degree of M D. The court further found (1) that Barker had falsely represented that the colons of the defendant and her children were diseased when in fact their colons were normal and required no medical treatment, (2) that by reason of these false representations the defendant submitted herself and children to an extended course of treatment consisting, apparently, of numerous high colonic irrigations, and paid Barker \$775 therefor, and (3) that the

treatments were not beneficial. The trial court, however, dismissed both Barker's complaint and the defendant's cross-complaint and both parties appealed to the Supreme Court of Washington.

In the opinion of the Supreme Court, the findings of the trial court were sufficient to establish that Barker falsely and fraudulently misrepresented the physical condition of the defendant and her children to secure employment and that the defendant, relying on those misrepresentations, employed and paid him. Since, said the court, fraud vitiates every contract that may be based on it, money obtained by false and fraudulent misrepresentations may be recovered. The court accordingly entered judgment for \$775 in favor of the patient.—*Barker v Weeks (Wash)*, 47 P (2d) 1

## Society Proceedings

### COMING MEETINGS

American College of Physicians Detroit Mar 2-6 Mr E R Loveland  
133 South 36th Street Philadelphia Executive Secretary  
American Heart Association New York, February 3 Dr H M Marvin  
50 West 50th Street, New York, Acting Executive Secretary  
American Orthopsychiatric Association Cleveland Feb 20-22 Dr George  
S Stevenson 50 West 50th Street New York Secretary  
Annual Congress on Medical Education Medical Licensure and Hos-  
pitals Chicago, Feb 17-18 Dr W D Cutter, 535 North Dearborn  
Street Chicago Secretary  
Southeastern Surgical Congress, New Orleans March 9-11 Dr Benjamin  
T Beasley 478 Peachtree Street N E Atlanta Ga Secretary  
Western Section American Laryngological Rhinological and Otolological  
Society Del Monte, Calif Feb 12 Dr Carroll Smith Paulsen  
Building Spokane Wash Chairman

### CENTRAL SOCIETY FOR CLINICAL RESEARCH

*Eighth Annual Meeting held in Chicago Nov 1 and 2 1935*

The President, DR CYRUS C STURGIS Ann Arbor Mich,  
in the Chair

#### Alterations in Serum Proteins as Index of Liver Failure

DR EDMUND FOLEY, DR ROBERT W KEETON AARON B KENDRICK, PH D., and DUANE DARLING, BS, Chicago. During the last two years serum albumin and serum globulin determinations have been made in cases of obvious or suspected liver injury. When there was advanced liver damage as substantiated by the clinical course of the case, the serum albumin was reduced with a reversal of the albumin globulin ratio, with less damage the changes were not so marked. The alterations in the serum proteins in control cases of starvation, congestive heart failure and carcinomatosis with ascites were not significant. This evidence combined with that in the literature would indicate that the liver is an important site of serum albumin formation and that alterations in the serum proteins are an index of liver failure.

#### DISCUSSION

DR ROBERT W KEETON, Chicago. There were four cases of stone in the common duct. In three death followed within a short period in spite of conservative operative procedure. These three had a reversal of the albumin-globulin ratio with a lowering of the serum albumin prior to operation. There was another case of splenomegaly in which we were considering diagnoses of cirrhosis and Hodgkin's disease. When it was found that the serum albumin value was not reduced a diagnosis of Hodgkin's disease was adopted. We were able to confirm this later by biopsy and autopsy.

DR DAVID P BARR, St. Louis Mo. Was there any relation between the chemical observations the number of tappings and the rapidity with which the fluid reaccumulated?

DR LEON SCHIFF, Cincinnati. I should like to ask whether the authors performed the Takata test on the same specimens of blood on which they made protein determinations.

DR ALBERT M SNELL, Rochester Minn. My associates and I have made serum protein determinations in a number of cases of hepatic diseases of various types with results that are almost identical to those reported by the authors. We thought at one

time that there might be some correlation between increases in serum globulin and a positive Takata-Ara reaction, but our subsequent experience has not confirmed this. In both clinical hepatic disease and experimental hepatic injury with phenylhydrazine we have noted that a rise in globulin and a fall in albumin indicate increasing hepatic damage, whereas during periods of improvement the reverse is noted. Changes of this sort are so striking that we feel that alterations in the albumin-globulin ratio must have a definite prognostic significance.

DR EDMUND FOLEY, Chicago. In these cases particular attention was given to whether the individual was tapped before the determination was made. None of these patients were tapped. We felt that if the individual had multiple tappings before the serum albumin-globulin determination was made, it would be evident that there would be sufficient loss of albumin to deplete the liver. Recently some work has been done in which tapping had been performed at regular intervals and the aspirated amounts of albumin lost were determined and found to amount to from 10 to 18 Gm a day, with no relationship between the amount of albumin in the fluid and blood proteins. We were interested in the Takata test for several reasons, one of which was that it was originally brought out for pneumonia and then applied as a differential diagnostic point between ordinary meningitis and syphilitic meningitis, and finally came down to be one of the liver function tests. Our experience with the Takata test has been very disappointing. Whether there was a misunderstanding of the technic or we did not carry it out as it should be, I do not know, but we were not able to get results. We were also interested in the relation to the Weltmann reaction, which was originally a liver function test and is now being used for the diagnosis of pneumonia.

#### Effects of Hypertonic Sucrose Solution on Patients with Hypertension

DRS FRANCIS D MURPHY, ALEX M KATZ and RAYMOND HERSHBERG, Milwaukee. Our study includes eighteen cases of benign essential hypertension, eight cases of malignant hypertension and two cases of chronic glomerular nephritis with hypertension. All spinal fluid pressures are obtained by using an indwelling spinal tap needle, and readings were taken every fifteen minutes after the mean level of the blood pressure and pulse was established. The investigation in each case was continued as long as the patient was able to retain the indwelling spinal tap needle. We reached the following conclusions: 1. Intravenous hypertonic sucrose (50 per cent) solution causes prolonged and pronounced reduction of spinal fluid pressure. 2. Intravenous hypertonic sucrose solution causes a slight reduction of the blood pressure. 3. Headaches and convulsions are controlled more readily with hypertonic sucrose solution than with other forms of treatment used by us. 4. Following such treatment, the patients seem to be clinically improved. 5. Further data on the effect of the administration of such solutions on the changes in the cytochrome are being collected and will be ready for presentation in the near future.

#### DISCUSSION

DR FRANCIS D MURPHY, Milwaukee. I should like to discuss the therapeutic implications suggested by this report. In cases of chronic nephritis with hypertension and in malignant hypertension there are times when the most aggravating symptoms are due not to renal failure but to increase of intracranial pressure. It is desirable at times to reduce the intracranial pressure to avoid convulsions and other unfavorable sequelae. In 1908 Cushing did subtemporal decompression to save the eyesight of patients who had hypertension. Lumbar puncture has been used for the reduction of increased cerebral pressure. However undesirable results may follow this procedure. Cases have been reported in which the patient died following lumbar puncture and at autopsy it was found that the medulla oblongata had been pressed into the foramen magnum. Following the experimental work of Weed and McKibben in 1919 wherein they showed that intravenous hypertonic saline and dextrose solutions reduced intracranial pressure, this measure was applied clinically, chiefly by surgeons. More recently, however, Masserman and others have shown that the introduction of hypertonic dextrose solution is followed by a

drop in cerebrospinal fluid pressure, but that within a few hours there is a secondary rise above the basic level, thereby aggravating the symptoms that the treatment was supposed to cure. Recent work in the physiologic laboratory by Bullock, Gregersen and Kinney showed that 50 per cent sucrose solution would reduce the cerebrospinal fluid and sustain the reduction for hours, and there was no secondary rise above the basic level. Taking advantage of this work, we have used sucrose solution, 50 per cent intravenously, in an attempt to reduce spinal fluid pressure in patients with hypertension, especially those with the malignant form. We were impressed with sucrose because, first, it is nontoxic, second, it reduces the spinal fluid pressure and sustains the reduction, third, it is a powerful diuretic. We believe from this preliminary work that sucrose solution is worthy of trial. It does not affect the primary lesion in the disease but it makes the patient feel better.

DR. M. W. BINGER, Rochester, Minn. My associates and I have been using concentrated sucrose solution in cases of malignant hypertension but not in the concentration used by the authors. We gave it intravenously in 25 per cent solution with 3 per cent acacia. We have had good results in patients with severe headaches that were not amenable to other methods of treatment. We have noted the powerful diuretic effect. I should like to ask whether they have had any experience in cases of congestive heart failure and myocardial degeneration and, if so, whether it changes the final outcome of these cases. Our experience with malignant hypertension is that the disease progresses regardless of therapy.

DR. ALEX. M. KATZ, Milwaukee. We gave sucrose in two cases of myocardial degeneration, one in which gallop rhythm was present and the other with congestive failure. In giving sucrose solution one must be careful to run the solution very slowly.

#### Studies on the Physiology of Fever

DR. WALTER M. SIMPSON, Dayton, Ohio. The development of a relatively simple air-conditioned apparatus, known as the Kettering hypertherm, for the induction and maintenance of artificial fever, has provided a suitable means to study the physiologic effects of fever, uncomplicated by infection. The hyperventilation that accompanies fever causes considerable loss of carbonic acid. Blood and tissue chlorides are lost in the sweat. This loss of acid ions induces some degree of alkalosis in patients who are subjected to high fever for several hours. Supplying large quantities of chloride by mouth (from 2 to 4 liters of 0.6 per cent sodium chloride solution), and the inhalation of oxygen-carbon dioxide, helps to combat the alkalosis. The basal metabolic rate is elevated 55 per cent per degree (Fahrenheit) of temperature elevation during the maintenance period. The electrocardiogram shows only minor transient alterations. The pulse rate increases 7 beats per degree (Fahrenheit) of temperature elevation during the maintenance period. There is no evidence of essential difference in pulse rate or other physiologic responses to fever induced by either air-conditioned external heat or so-called internal heat (high frequency) methods. Direct leukopoietic stimulation is indicated by the marked and sustained increase of polymorphonuclear leukocytes, with a distinct shift to the left in the Schilling hemogram. The normal thermometric gradient of deep and superficial structures is abolished during sustained artificial fever. The rectal temperature provides a reliable index of the temperature attained in the deep structures during fever. The mouth temperature is not reliable.

#### DISCUSSION

DR. PAUL S. BARKER, Ann Arbor, Mich. I should like to ask Dr. Simpson whether the patients who showed electrocardiographic changes had significant degrees of alkalosis.

DR. PHILIP S. HENCH, Rochester, Minn. Dr. Simpson and his colleagues have demonstrated many physiologic reactions to artificial fever, some of them beneficial, others to be avoided or minimized if possible. In spite of these diverse reactions, many of which are profound the procedure is essentially a safe one, and through their work they have helped to make it safe. I am sure therefore that he would want us to know that every now and then the most profound physiologic reaction of all may occur, namely, death. In spite of careful selection of patients and the supervision of a trained hospital staff, this

catastrophe may occasionally eventuate. Dr. Simpson has, I believe, treated more than 400 patients without a single death, which is an excellent record. A few months ago the Council on Physical Therapy of the American Medical Association reported on the national experience with fever therapy to date. Of 4,809 patients with various diseases who were treated by different physicians throughout the country, twenty-nine died, a mortality of 0.6 per cent. Many of the patients had advanced neurosyphilis, and undoubtedly some of the deaths should have been ascribed to that and not to artificial fever. At the Mayo Clinic we have had only one death among more than 325 patients who were treated in this manner. Although the one patient who died, a young woman, was given a very careful preliminary physical examination, she died shortly after the initial session of fever. The cause of death could not be determined. We have a right to conclude that the administration of artificial fever is an essentially safe procedure when applied in a hospital by a specially trained personnel. Under these circumstances the mortality should be very small. Nevertheless, the fact should be faced that such therapy, even when carefully administered by approved technic, will be followed every once in a while by a serious uncontrollable physiologic reaction.

DR. WALTER M. SIMPSON, Dayton, Ohio. Since some degree of alkalosis is uniformly present in persons subjected to high, sustained artificial fever, it is quite likely that some of the alterations in the electrocardiogram are related to this disturbance in acid-base equilibrium. I am glad that Dr. Hench has reemphasized the fact that artificial fever therapy is not without hazard. While its usefulness in the treatment of gonococcal infections, syphilis and chorea has been demonstrated, its application to other diseases is still in the experimental stage. Artificial fever therapy should be undertaken only in institutions with skilled physician and nurse personnel. It is not adaptable to ordinary office practice. We have subjected our 400 patients to some 20,000 hours of sustained fever therapy without fatality.

#### Direct Venography in Obstructive Vein Lesions

DRS. NELSON W. BARKER and JOHN D. CAMP, Rochester, Minn. Previous roentgenographic visualization of veins after intravenous injection of opaque mediums has been limited largely to the study of varicosities. A simple technic is described for use, particularly in obstructive lesions. The medium Diodrast (3,5-diiodo-4-pyridone-*N*-acetic acid and diethanolamine) is harmless, is rapidly excreted from the body and is sufficiently opaque. Studies have been made of patients who had both intrinsic and extrinsic obstructive lesions of the saphenous, femoral, iliac, subclavian and jugular veins. A knowledge of venous pathology and physiology is necessary for correct interpretation of the plates. It is felt that in certain cases direct venography may be of definite diagnostic aid.

#### Arteritis of the Temporal Vessels

DRS. BAYARD T. HORTON, GEORGE E. BROWN and THOMAS B. MAGATH, Rochester, Minn. This report presents a new clinical syndrome, the etiology of which is still obscure. Five subjects who had temporal arteritis and periarteritis, with local and systemic manifestations, were studied. The duration of symptoms was from four to six weeks. Raised, red, tender areas were present along the temporal vessels and over the scalp. Fever, weakness, anorexia, loss of weight, anemia and mild leukocytosis were present. Eosinophilia was absent. Segments of the temporal artery from each patient were resected for microscopic study, culture, and inoculation of animals. Each patient made a satisfactory recovery. Both cultures of the vessels and experimental studies on animals gave negative results. Microscopic sections of the arteries showed acute and subacute thrombosis and round cell infiltration in the adventitia and media, with almost complete destruction of the medial coat and its replacement with a granulomatous-like tissue with numerous giant cells. Reports of similar cases have not been noted in a review of the literature.

#### DISCUSSION

DR. W. M. CRAIG, Rochester, Minn. Having operated in a number of the cases presented by the authors, I was interested in the amount of clinical relief secured following resec-

tion of the vessels, and also in the gross appearance of the lesion. The operations were carried out under local anesthesia, with very little discomfort to the patient, the involved vessels were ligated above and below and resected. There was much less localized periarteritis than we had anticipated, making resection quite easy. The wounds healed satisfactorily and there was very little postoperative discomfort.

DR. HARRY A. SINGER, Chicago. I should like to report two instances of arteritis, one involving the temporal vessels similar to the series just described and the other affecting the arteries of the gallbladder. The first patient was a woman in her late fifties, who was admitted to the dispensary of the University of Illinois in 1930. She had suffered during the previous year from symptoms referable to a polyarthritides, and a polyneuritis accompanied by fever, asthenia and a loss of 60 pounds (27 Kg.). Her chief complaint at the time of admission to the dispensary was pain in the head associated with the presence of pea-sized, red, tender nodules along the course of the temporal vessels. A clinical diagnosis of periarteritis nodosa was made and a nodule removed for biopsy. The microscopic section showed an artery cut longitudinally together with the overlying skin. A dense infiltration of inflammatory cells about and within the wall of the blood vessel was observed. The intima of the artery was greatly thickened and the lumen correspondingly narrowed. After a few weeks of symptomatic treatment the patient recovered and felt well during the remainder of the period of observation, which was one year. The second patient, a man in his middle forties, died in what appeared to be a uremic state. He had had a positive Wassermann reaction and had received intensive antisyphilitic treatment. The autopsy was performed by Dr. R. H. Jaffe, who found a ruptured gallbladder filled with clotted blood. No stones were present. On inspecting the lining of the gallbladder, Dr. Jaffe observed peculiar superficial ulcers with geographic outlines and from the gross appearance diagnosed periarteritis nodosa. He removed an unusually large number of blocks of tissue from various structures and organs for microscopic examination, expecting to find changes in the blood vessels elsewhere. Surprising as it may seem, the vascular changes were found to be restricted to the gallbladder. A section of the wall in the intact portion showed considerable to extreme thickening of the intima of the arteries. In a microscopic section of an ulcerated portion of the gallbladder wall the lumen of the blood vessel was seen to be practically obliterated and the wall and the surrounding tissues infiltrated with round cells. Elastic stains demonstrate that the vasculitis was not syphilitic. The changes in the gallbladder were obviously recent and those in and about the arteries were old. The ulceration was therefore on an ischemic basis. The cases presented by Dr. Horton and his collaborators and my first case indicate that there exists a benign form of periarteritis nodosa. My second case suggests that arteritis may be localized in various parts of the body.

DR. JOHN A. MACDONALD, Indianapolis. I should like to ask whether resection of the vessels influences the clinical course. In my one case of temporal arteritis, in all ways identical with those described by the authors, in a woman, aged 60, resection of the vessel was followed by immediate cessation of the fever and rapid recovery.

DR. DAVID P. BARR, St. Louis. I should like to ask Dr. Singer whether the vessels involved in the gallbladder were veins or arteries. Some time ago Dr. Kountz had the opportunity of studying a case of periarteritis nodosa and found involvement of the arteries in many parts of the body but no involvement of veins except in the gallbladder.

DR. SINGER. The vascular alterations in the gallbladder affected the arteries.

DR. BAYARD T. HORTON, Rochester, Minn. No doubt more cases of arteritis of the temporal vessels will be recognized after the medical profession has become acquainted with the interesting clinical syndrome that we have just described. Six weeks ago Dr. George E. Brown received a detailed letter from a Dr. Mathew C. Riddle of Portland, Ore. describing an identical case. The patient was a man aged 65. The course was similar to that in the cases just reported and complete recovery occurred. We observed our first case four

years ago. The patient was a man, aged 68 at that time. Six weeks ago I had a letter from him saying that he was perfectly well, with no recurrence whatever.

#### The Impedance Angle as a Test for Hyperthyroidism

DR. FRANKLIN D. JOHNSTON, Ann Arbor, Mich. For the past twelve months the impedance angle or phase angle of normal subjects and patients with hyperthyroidism has been measured according to the method described by Brazier. The phase angles of normal adult males and females fall into two distinct groups according to sex and while considerable individual variation is noted, the averages of each group agree closely with the results of Brazier. Patients with hyperthyroidism show definitely lower phase angles, usually outside the limits of normal variation and occasionally 50 per cent or more below the average normal value for the patient's sex. The results obtained so far appear to be reliable, and if the method is properly used and its accuracy constantly checked it may be of clinical value.

#### DISCUSSION

DR. ARLIE R. BARNES, Rochester, Minn. I am glad this subject has been presented in a conservative way and that conservative claims have been made for it. Last fall, while in London, I had the pleasure of visiting the Courtauld Institute of Biochemistry, and this question of the impedance angle was being investigated in the laboratory of Drs. Dodds and Robertson at that time. They had practically completed their investigation and they felt that the work of Brazier was open to criticism from two points of view, the first being that the values obtained in normal patients were subject to a greater variation than she had indicated and in the second place they found that while there was a certain amount of correlation between the basal metabolic rate and the phase angle there were too many instances in which the two values did not agree. They had a definitely unfavorable reaction to the employment of the phase angle determination as a practical means of diagnosis in hyperthyroidism.

DR. E. L. SEVRINGHAUS, Madison, Wis. Has any information been obtained on the variations of the phase angle caused by changing the conductivity of the body tissues?

DR. ALEX M. KATZ, Milwaukee. It seems to me that this phase angle would measure the vascularity of the tissues, whether it is in venous disease of the extremity, edema or cardiac failure. Has this study been carried out in abnormal patients who might have changes in the skin?

DR. M. A. BLANKENHORN, Cincinnati. Does the phase angle vary with age and with sex? This question expresses the same idea as Dr. Katz had with regard to the vascularity and nutrition of the skin in hyperthyroidism. The bedside physician is impressed with the texture and moisture of the skin as observed by feeling. What is the phase angle in children and in women?

DR. HUGO A. FREUND, Detroit. About a year ago my associates and I began to study hyperthyroid cases by the use of the phase angle. We were intrigued by the favorable reports from Dr. Brazier and the German clinics. Dr. Sneek at Harper Hospital studied a number of cases recently, but his results were not as favorable as those reported by Dr. Johnson. One other very interesting feature that was brought out was that the electrolytes of the body change the angle, that if the blood chlorides are low the phase angle will be low and vice versa.

DR. FRANKLIN D. JOHNSTON, Ann Arbor, Mich. There appears to be considerable interest with regard to this method. At the Lahey Clinic in Boston a number of cases were studied and it was concluded that the method was not highly reliable. It was felt that it fell down particularly in the borderline cases in which diagnostic help was needed. Children show uniformly low phase angles, and no sex difference is apparent until puberty. As far as I know there have been no careful studies made on children of various ages. Most of the children we have tested gave phase angles between 0.080 and 0.100 but my present feeling is that the method will not be of great value in children. Regarding dehydration, we have made observations on one normal subject who was maintained on a dry diet with no added fluid for several days. At the end of this period although the urinary specific gravity was

one of the highest ever attained in a normal subject, the phase angle was reduced only about 0.015 from control observations and was still well within limits of normal variation. In response to Dr Katz's question about phase angle studies in patients with vascular lesions, we have made no studies with this question in mind. There are many diseases and pathologic states that remain to be investigated and we hope that the presentation of the method today may interest other workers. We know practically nothing of the actual electrical properties of the body or why the phase angle is lowered in hyperthyroidism. An observation of Crile that the tissues of patients with hyperthyroidism show an increased permeability to ions may have some bearing on the question. Under these circumstances one would expect a reduction in the electrical capacitance and resistance of the tissues, and both of these changes might cause a decrease in the phase angle. I wish to mention the six women with high metabolism tests who showed phase angles higher than the average normal value for women. Three of them had diabetes and the most marked exception of the group had a carcinoma of the breast. It seems important to study a number of patients with diabetes and other diseases to see whether conditions besides hyperthyroidism may influence the phase angle. I have studied a few diabetic patients but have found no definite relation between hyperglycemia or acidosis and the phase angle. Finally, the importance of constantly checking the accuracy of the results obtained by the frequent measurement of individuals whose phase angles are known cannot be overemphasized. It has been found that accidental minor changes in the electrical connections or the electrodes may produce significant changes in the observed phase angles, so that frequent control determinations are important.

#### Induction of the Refractory State of the Thyroid to Thyrotropic Hormone

DRS R. C. BRUNER and PAUL STARR, Chicago. It was shown last year that, during the continuous injections of large doses of the pituitary thyrotropic hormone, guinea-pigs sustained a period of intense thyroid activity followed by a period in which the thyroid was refractory to any further injections. In this paper it is demonstrated that, in guinea-pigs, succeeding short periods of injections of dosages producing only slight thyroid activity with five to ten days' rest between courses of injections will rapidly induce a refractory state, such that the injection of 400 times the original dose is often without any effect. Repeated basal metabolism tests are used to measure these effects. It is thought that recognition of such a phenomenon may be of clinical importance.

#### DISCUSSION

DR. WILLARD O. THOMPSON, Chicago. I should like to mention observations that are in agreement with those reported in animals by Drs Bruner and Starr and others. Drs Taylor, Phebe K. Thompson, Dickie and I made a report last year before this society on the calorogenic action of pituitary extracts in man and showed that the effect was temporary in spite of prolonged administration. In some of the patients, subsequent injections of the extracts have been made without any increase in metabolic rate. In two patients, in whom the administration had to be interrupted before the metabolism had returned to its premedication level, a second course of treatment did produce an increase in metabolism while in a third patient no effect was noted under these circumstances. In some patients with exophthalmic goiter the metabolism finally dropped to a lower level than before the administration was started, usually after an initial increase.

#### The Dietary Management of Diabetes

DR. CYRIL M. MACBRYDE, St. Louis. Although the present tendency in the treatment of diabetes is to allow increasingly large amounts of carbohydrate in the diet, students of the disease have differed widely in their opinions concerning the optimal balance of the various foodstuffs. Even now twelve years after the introduction of insulin, there are advocates of high fat diets employed with the idea of resting the pancreas and raising the tolerance to carbohydrate, while others advise high carbohydrate to stimulate the pancreas. Since in individual cases relatively good results are obtained by apparently opposite types of diet, it would seem that the optimum lies somewhere between. This position has been taken by many, who

like Joslin, give moderate amounts of both fat and carbohydrate. Another possibility may be considered: certain diabetic patients do best on high carbohydrate and others on high fat. This was suggested in a study started three years ago, in which it was found that diabetic patients fall roughly into two groups, the relatively insulin sensitive and the relatively insulin resistant. The insulin-sensitive or "insular" type seems to be caused primarily by decreased production of insulin, while the insulin-resistant, "extra-insular" type may be at least partly caused by an antagonistic factor or factors diminishing the effectiveness of insulin whether its source be exogenous or endogenous. Special studies were then undertaken to determine whether the two groups differed in their responses to fat and carbohydrate. Twelve patients have been intensively studied, each of them being observed for from three weeks to three months in the hospital and from six months to two years in the outpatient department. It was found that the sensitive type tends to lose tolerance on prolonged carbohydrate feeding while fat is well borne. The resistant type gains tolerance with high carbohydrate and loses it with high fat. It is suggested that in the sensitive type exhaustion of the overtaxed islets can occur, while in the resistant group increased stimulus to the islets and inhibition of antagonistic factors results with high carbohydrate diets. Determination of the relative response to insulin would seem important in deciding on the optimal diet for each diabetic patient.

#### DISCUSSION

DR. HENRY J. JOHN, Cleveland. I should like to ask Dr MacBryde whether he differentiates these two groups only on the dosage of insulin, if so, whether there can be a transmutation of these cases, whether one will get an insulin resistant case today and in two or three months the same case can be insulin sensitive. A little girl, aged 5 years, for six weeks was given 100 units of insulin each morning and night. There was no insulin reaction. A month or two later if I gave the child more than 20 units of insulin she would have an insulin reaction. That state has not changed. Consequently, in the early period she might have been classed as insulin resistant whereas now she is insulin sensitive. Also I should like to ask what criteria he used for his extra-insular group.

DR. SAMUEL SOSKIN, Chicago. The differentiation between the two types of diabetic patients, which have been commonly called the older type and the younger or juvenile type and which seem to correspond to the "insulin resistant" and "insulin sensitive" types respectively, is familiar to most clinicians. I am interested in Dr MacBryde's classification because of recent work in interpreting the metabolic disturbance in diabetes mellitus in terms of the regulatory mechanism of the liver. From this point of view the insulin sensitive type of diabetic patient is one with a disturbed regulatory mechanism but a normal functional capacity. As Dr MacBryde has pointed out, this type is usually found in the younger age groups. The insulin resistant type of diabetic patient, on the other hand, occurs more frequently in older persons. In these individuals the liver is not only out of control but has also been relatively insensitive to the regulatory hormones because of a long succession of damaging insults. These factors account for the difference in the reaction of the two types of diabetic patients to insulin and for the more favorable action of dextrose in the insulin resistant type. There is evidence as to the beneficial effects of dextrose on liver function in any form of toxemia.

DR. CYRIL M. MACBRYDE, St. Louis. In answer to the first question, none of these cases showed any of the marked temporary changes usually indicated by the term "insulin resistant." They did show a relatively poor response to insulin over a long period of time. Some of these tests were repeated at the end of two years. There was no obvious reason why these patients should not react better to insulin. Concerning the second question, the term "extra-insular" is used only to stimulate thought on the subject. There is no proof that this relative resistance is caused by extra-insular factors. There are many facts to suggest it, however. The third comment concerning the role of the liver in causing this relative insulin resistance, I consider very pertinent. The liver must be one of the most important factors but I doubt that it is the only one that causes this type of reaction.

(To be continued)



## Current Medical Literature

### AMERICAN

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Titles marked with an asterisk (\*) are abstracted below

### American Journal of Cancer, New York

25 501 720 (Nov.) 1935

- Chordoma Study of One Hundred and Fifty Cases R E Mabrey Boston.—p 501
- \*Bone Metastasis in Carcinoma of Stomach Report of Five Cases H D Kerr and R A Berger Iowa City.—p 518
- Malignant Myoma J McFarland Philadelphia.—p 530
- Carcinoma of Stomach in Identical Twins R E Miltzer Wrentham Mass.—p 544
- Quantitative Investigation on Occurrence of Vitamin G in Rat Sarcoma Including Comparison with Vitamin G Content of Liver Tissue from Same Animals L B Brahe, New York.—p 551
- Relationship Between Vascularity and Reaction to Radium of Squamous Epithelium M G Seelig, C T Eckert and Zola K Cooper St Louis.—p 585
- Effect of Prolonged Cyanide Treatment on Body and Tumor Growth in Rats Isabella H Perry San Francisco.—p 592
- Genetic Appearance of Spontaneous Carcinoma of Mammary Gland in C/H Mice L C Strong New Haven Conn.—p 599
- Effect of Oil of Allspice on Incidence of Spontaneous Carcinoma in Mice L C Strong New Haven Conn.—p 607
- Metastasis of Carcinoma of Breast to Supraclavicular Lymph Nodes E T Leddy and A U Desjardins Rochester Minn.—p 611
- Breeding Behavior and Tumor Incidence of Black Agouti Stock of Mice J J Bittner Bar Harbor Maine.—p 614
- Sarcoma of Soft Parts Observed at the Collis P Huntington Memorial Hospital 1924-1929 Results of Treatment C C Simmons Boston.—p 621
- Statistical Study of Relation of Parity to Carcinoma of Cervix Uteri P Tompkins Philadelphia.—p 624
- Concerning Proper Use of Standard Deviation of Mean Tumor Diameter F Bischoff Santa Barbara Calif.—p 628
- Tumors of Connective Tissue C F Geschickter and D Lewis Baltimore.—p 630

**Bone Metastasis in Carcinoma of Stomach—Kerr and Berger** draw attention to the fact that, though carcinoma of the stomach is one of the most common malignant tumors of adult life, bony metastases from this source are infrequent. The total number of cases showing bone involvement is variously stated as from 1 to 22 per cent of the total (Schinz Fraenkel) though the usual figure is less than 6 per cent (Müller, Von Glahn Colwell, Symmers). The reported incidence depends obviously on whether the authors' observations have been made at necropsy or roentgenographically and in either case, on the thoroughness of the search. In any event metastatic involvement of the bones certainly is relatively low in gastric cancer as compared, for example to that in carcinoma of the breast and prostate. The authors collected 143 apparently authentic cases in the literature, with a case or two of direct invasion and one doubtful case. To these they add three cases with roentgen evidence of osseous involvement and two found at necropsy, bringing the total number to 148. They observed that metastasis to bone is most frequent at the sites of the red marrow—spine, ribs, femur sternum and pelvis. Metastases are either osteoplastic, osteoclastic or both without regard to the characteristics of the primary lesions. The site, size and type of the primary tumor seem to have nothing to do with the appearance of osseous involvement. Bone metastasis is more frequent in the relatively young although it may occur at any age. Dissemination is probably through the blood stream. Some cases show an anemia which morphologically cannot be distinguished from a primary type and which may show a large percentage increase in immature cells of the myeloid series.

**Relation of Parity to Carcinoma of Cervix Uteri—Tompkins** points out that although it is generally believed that childbirth predisposes to the development of carcinoma of the cervix uteri, a survey of the literature disclosed no convincing reasons for this belief. He has made a statistical inquiry into

the relation between childbirth and cervical carcinoma. The data for this study were taken from the Report of the Bureau of the Census for 1930, Mortality Statistics for 1930, and medical publications. The study is limited to women in continental United States during the year 1930. Only women aged 30 or more are considered. Most parous women (88 per cent) bear their first child before this age, and most cervical carcinomas (96 per cent) occur after this age. In brief, the method of the inquiry was to estimate the number of parous and nulliparous women living in the United States in 1930, and the numbers of each dying from cervical carcinoma in the same year. From these figures the death rates from cervical carcinoma in the two groups were calculated and compared. It is doubtful whether the relation between parity and cervical carcinoma can be reliably determined from the statistics at present available. However, from computations based on such data as could be secured, it appears that in the United States in 1930, among women 30 years of age or more, the death rate from carcinoma of the cervix was at least twice as great among those who had borne children as among those who had not.

### American J Obstetrics and Gynecology, St. Louis

30: 609 762 (Nov.) 1935

- Experience with Multiple Dose Roentgen Therapy in Malignant Diseases of Uterus and Ovaries W P Healy New York.—p 613
- \*Physiologic Changes Occurring in Urinary Tract During Pregnancy J M Hundley Jr, H J Walton J T Hibbitts I A Siegel and C B Brach, Baltimore.—p 625
- Histogenesis of Certain Ovarian Tumors and Their Biologic Effects S H Geist, New York.—p 650
- Toxemias of Late Pregnancy W A Thomas E D Allen, C P Bauer and M R Freeland Chicago.—p 665
- Treatment of Vesicovaginal Fistulas Past and Present N F Miller Ann Arbor Mich.—p 675
- Tubal Reimplantation—In Retrospect G de Tarnowsky Chicago.—p 696
- Hematometra J A McGlenn and W B Harer Philadelphia.—p 704
- Consideration of Phenomenon of Ovulation and Its Relation to Sex Cycle I F Stein Chicago.—p 710
- \*Clinical Test of Newly Recognized Oxytocic Principle of Ergot and New Method of Administration V L Tuck Sherman, Texas.—p 718
- Primary Carcinoma of Fallopian Tube Report of Case W T Dann reuther New York.—p 724
- Mono Amniotic Twins One Normal the Other Anencephalic, Multiple True Knots in Cords S Litt and H A Strauss Chicago.—p 728
- Chorionepithelioma Following Full Term Pregnancy Case Report C B Lull Philadelphia.—p 730
- Spontaneous Evolution of Transverse Presentation W G Fraser Brooklyn.—p 732
- Brenner Tumor of Ovary P H Smith Evanston Ill.—p 734

**Changes in Urinary Tract During Pregnancy—Hundley** and his associates studied the ureteral changes throughout the entire course of gestation as well as in the puerperium. The study was begun with thirty-five normal pregnant women who had no past history of any urinary infection and whose urine was microscopically and culturally normal. The most constant change in the urinary system was a dilatation of the pelvis and calices of one or both kidneys, a dilatation and tortuosity and kinking of one or both ureters, and a lateral displacement of these structures. Every patient showed some deviation from the normal, ranging from a slight dilatation to a marked degree of hydronephrosis and hydroureter. The right kidney and ureter were affected more often than the left, but the left ureter was displaced laterally more frequently. The portion of the ureter that runs over the pelvic wall was not visualized whereas the pelvic ureter was often well outlined. In examinations from the ninth to the fifteenth week there were thirteen patients studied, and the pelvic ureter was visualized in all but one. Eleven of these showed some lateral displacement, while slight tortuosity of the left ureter was noted in two. Only three showed slight dilatation of this pelvic portion of the ureter, two being on the right and one on the left. With the advance of pregnancy, the dilatation of the ureter and pelvis increased gradually. Following delivery there is a return of the urinary system to normal. Of twenty-six patients examined after delivery, eighteen showed a return to normal in twenty-eight days. The presence of frank infection greatly retards and delays the normal involution processes. However, the cases studied were normal and showed no signs of an inflammatory process. Dilatation of the urinary tract occurred earlier in the multiparas than in the primiparas. All the patients studied delivered normally. The authors show that the primary changes in the

ureter are hormone-like in action and consider the subject of pressure, which is the second etiologic factor in the causation of dilatation. In support of the theory of pressure they observed that in catheterizing the right ureter during the latter part of pregnancy, with a catheter armed with a number 4 mm wax bulb, definite obstruction and "hang" are encountered at the pelvic brim. When the same procedure is done following delivery, no obstruction or "hang" is encountered, showing that whatever obstruction existed during pregnancy was relieved by the birth of the child.

**Oxytocic Principle of Ergot and Its Administration.**—Tuck thinks there must be many advantages in the use of the oxytocic principle of ergot, since the lochia is almost free from a bloody tinge after three or four days when the alkaloid has been used in the early puerperium. The theoretical objection raised by many who have no practical experience with the rectal administration of the oxytocic is that there is danger of its causing infection in the genital tract, a possible danger which has not become apparent in the author's series. The morbidity (according to his standard of any elevation of temperature of more than 100 F occurring twice in twenty-four hours, after the first twenty-four hours after delivery) in 204 patients receiving the drug orally and hypodermically was 14 per cent. In 128 patients receiving the drug rectally at delivery the morbidity was only 9 per cent. No maternal deaths occurred. It would seem that the rectal route when used properly offers no more danger of infecting the mother than the oral and hypodermic routes. The results in the 332 women were uniformly satisfactory, regardless of the mode of administration. No bad results were encountered and the action of the drug indicates that it is far superior to any of the older known oxytocic ingredients of ergot. Rectal administration is recommended, as the contractile response of the uterus is more rapid (from one to two and a half minutes).

### American Journal of Ophthalmology, St. Louis

18: 1003 1086 (Nov.) 1935

- Studies of Retinal Circulation by Direct Microscopy R K Lambert, New York.—p 1003  
Aniseikonia Factor in Functioning of Vision A. Ames Jr Hanover N H.—p 1014  
Study of Pneumococcus Group from Inflamed Conjunctiva and Lacrimal Sac. S H McKee, Montreal.—p 1021  
Traumatic Ophthalmoplegias as Workmen's Compensation Problem M Davidson New York.—p 1030  
Illumination Intensities for Reading M A Tinker Minneapolis.—p 1036  
Newer Developments in Photography of the Eye W A Mann Jr, Chicago.—p 1039  
Ocular Chalcosis R. von der Heydt, Chicago.—p 1045  
Lid Closure Reflex of Pupil B Boshes and L L. Mayer Chicago.—p 1048

### American Journal of Pathology, Boston

11: 895 1034 (Nov.) 1935

- Studies on Relation Between Microglia, Histocytes and Monocytes H S Dunning and J Furth New York.—p 895  
\*The Cutaneous Glomus and Its Tumors—Glomangiomas O T Bailey Boston.—p 915  
Corneal Reactions of Normal and of Tuberculous Guinea Pigs to Tuberculinprotein and Tuberculo-phosphate S W Holley Chicago.—p 937  
Significance of Cellular Variations Occurring in Normal Synovial Fluid C F Warren G A. Bennett and W Bauer Boston.—p 953  
Effect of Centrifugation on Herpes Intranuclear Inclusions with Note on Cytoplasmic Inclusions of Unknown Origin in Rabbit Cornea A M Lucas and W W Herrmann, Iowa City.—p 969  
Primary Amyloidosis Limited to Tissue of Mesodermal Origin H A Reinmann R F Koncky and C M Eklund Minneapolis.—p 977  
Spontaneous Rupture of Pulmonary Artery J B McNaught and W Dock, San Francisco.—p 989  
Neurofibroma of Pharynx Associated with von Recklinghausen's Disease A. H Davis Paterson N J.—p 1001  
Technic for Demonstrating Perivascular Nerves of the Pia Mater and Central Nervous System W Penfield Montreal.—p 1007  
Papillomatosis Peritonei A H Wells, Kansas City Mo.—p 1011

**Cutaneous Glomus Tumors.**—Bailey states that the cutaneous glomus is an arteriovenous anastomosis in the stratum reticulare of the cutis, which is homologous with the glomus coccigeum and several less important vascular structures. It has an important function as an arteriovenous shunt in maintaining the body temperature and perhaps the blood pressure. From the cutaneous glomus, tumors arise that form a subgroup

of the hemangioma. The term glomangioma is suggested for them to indicate their derivation and character. Glomangiomas appear as small bluish nodules on the extremities or adjacent portions of the shoulder girdle. Very frequently they are located in the nail bed. Microscopically the tumors are composed of cells identical with those in the walls of the normal cutaneous glomus and its homologues. Nerve trunks are numerous in the connective tissue about the tumors, and nerve filaments pass among the glomus cells in large numbers. Occasionally elongate smooth muscle cells are seen either in solid masses or adjacent to vascular lumens. The glomangiomas represent the overgrowth of the entire arteriovenous anastomosis and in doing so their cells show a twofold differentiation. The elongate smooth muscle cells lose all myofibrils, while the reticulum investing them becomes much coarser and stains intensely with collagen stains. Secondly, the periglomic nerves grow into the tumors, and their terminal filaments end about the differentiating smooth muscle cells with the interposition of nerve endings. These two processes result in the formations of the glomus cells and are apparently interdependent. The tumors are associated clinically with severe radiating pain of neuralgic type. In character and distribution this has many similarities to the response of the normal glomus to much greater stimuli of the same character. Glomangiomas thus represent functionally as well as morphologically organoid overgrowths. Glomangiomas do not become malignant. Local excision gives complete and permanent relief from symptoms.

### American Journal of Tropical Medicine, Baltimore

15: 605 722 (Nov.) 1935

- Schizogonous Cycle of *Plasmodium Vivax*, Grassi and Felti M F Boyd Tallahassee, Fla.—p 605  
\*Atabrine and Plasmochin in Treatment and Control of Malaria D L Seckinger Atlanta Ga.—p 631  
Treatment of Malaria with Short Course of Quinidine J P Sanders, Caspiana La.—p 651  
Occurrence of Avian Malarial in Nature R D Maowell and C. Herman, Syracuse N Y.—p 661  
Protective Action of Neurotropic Against Viscerotropic Yellow Fever Virus in *Macacus Rhesus* M Hoskins Bahia, Brazil South America.—p 675  
Method of Producing Encystment in Cultures of *Endamoeba Histolytica* W S Stone Washington, D C.—p 681  
\*Bacteria Free Antigen for Complement Fixation Test to Amebiasis Preliminary Report of New Method of Preparation W S Stone Washington D C.—p 685  
Self Inoculation with *Endamoeba Histolytica* Trophozoites Through Vaseline and Longevity of Trophozoites in Vaseline Bertha Kaplan Spector Chicago.—p 689  
Blood Studies on Trichurias Infested and Worm Free Children in Louisiana G F Otto Baltimore.—p 693

**Atabrine and Plasmochin in Treatment of Malaria.**—Seckinger gives the effects of atabrine and plasmochin in a highly malarious area, in which a thick blood smear index of school children in six districts showed 80.1 per cent positive for malaria in October 1932. Because of the high incidence of subtertian malaria, 0.01 Gm of plasmochin was given three times a week throughout the seasons of malaria of 1933 and 1934, and 0.1 Gm of atabrine three times a day (three tablets) for five days, whenever the monthly blood smears were positive or clinical symptoms developed. Throughout both seasons there was a satisfactory control of gametocyte production, which it is believed was due to plasmochin. Most striking results were obtained in the reduction of malaria infection in the treated area as compared with an untreated adjoining district. This was due to the effect of atabrine. At the end of the 1933 malaria season the rate in the treated area was 10.9 per cent, as compared with a rate of 60.3 in the untreated area. In October 1933, those in the untreated area received full course treatments of atabrine. There was little variation in the rate during the early part of 1934, but as the season advanced there was an increase to 28.8 in the area originally untreated, whereas in the regularly treated area the incidence was only 8.8 at the close of the season in October. Atabrine has been found particularly effective in the sterilization of carriers. Of 186 positive cases before treatment in May and June 1933, only fifteen were positive in October. Of the fifteen cases only one was positive in July 1934 and five in October. The beneficial effects of both drugs are probably accountable for the lower infection rates among those individuals originally negative in the treated area, as compared with a similar group

in the untreated area. With winter intervening in the temperate zone to aid in malaria prevention it is believed that the effectiveness of atabrine and plasmoquin marks an important advance in the control of malaria in this latitude. The short course of treatment necessary, the effectiveness of atabrine as a schizonticide, and the efficacy of plasmoquin as a gametocide have been proved.

**Complement Fixation Test in Amebiasis**—Stone describes a method for the preparation of a pure *Endamoeba histolytica* antigen that is practically bacteria free and seems to be of greater value as a diagnostic aid in amebiasis than those used formerly. The procedures for the collection, separation from starch granules, washing, breaking up and extraction of the cysts are outlined. The antigen appears to be specific in all tests that the author has run up to the present time. It does not give cross fixation with syphilitic or other complement fixing serums. However, the number of cases tested so far is insufficient to determine its true value as a diagnostic agent. The antigen prepared by this method is now being distributed to several of the leading diagnostic centers in which frequent cases of amebiasis are found.

### Archives of Otolaryngology, Chicago

22 537-658 (Nov.) 1935

- Relation of Bronchiectasis to Infection of Paranasal Sinuses G E Hodge, Montreal—p 537  
\*Neoplasms Involving Middle Ear L A Schall Boston—p 548  
\*Glossodynia Reflex Irritation from Mandibular Joint as Principal Etiologic Factor Study of Ten Cases J B Costen St Louis—p 554  
Evaluation of Caloric Tests in Localization of Lesions of Posterior Fossa Study of Forty Verified Cases J L. Maybaum and M. Grossman, New York—p 565  
Value of Speech Training in Cases of Cleft Palate and Other Oral Conditions E E Scharie Montreal—p 585  
\*New Procedure for Treatment of Web in the Larynx Report of Case S Iglauer Cincinnati—p 597  
Staples and Double-Pointed Tacks as Foreign Bodies Mechanical Problems of Bronchoscopic Extraction C Jackson and C L Jackson Philadelphia—p 603  
Effect of Experimental Bilateral Turbinectomy on Development of Testes in Rabbit P R Nemours St Louis—p 626

**Neoplasms Involving Middle Ear**—Schall asserts that neoplasms of the middle ear are not medical curiosities. The most constant observation, although it may have but a casual relationship, is chronic otorrhea. The symptom most suggestive of neoplasm is the tendency to bleed from the external auditory canal. This bleeding may be of any degree of severity from a blood tinged discharge to severe hemorrhage after removal of granulations or an aural polyp. Pain may be an early symptom, but usually it does not occur until the growth has attained sufficient size to cause pressure. Facial paralysis occurred early in two cases of a series of fifteen. In the early stage there may be no symptom suggestive of neoplasm except the finding of an "aural polyp" on clinical examination. The removal of this polyp is followed by excessive bleeding. Microscopic examination of the specimen reveals the true diagnosis. This was true in two cases. If every aural polyp were studied microscopically the early diagnosis of a malignant growth would be made more frequently. In the early stage the roentgenogram may be of no diagnostic value. In a case of hemangio-endothelioma in which the roentgenograms revealed nothing abnormal extension of the tumor to the deep posterior canal cells was found at operation. Radical mastoidectomy with removal of the entire cutaneous canal followed by irradiation is indicated in every case of malignant growth presenting itself in the external auditory canal beyond the isthmus. That five patients have had no recurrence for from two to more than four years after treatment of neoplasm of the middle ear is proof that the prognosis in the disease is no longer hopeless.

**Reflex Irritation from Mandibular Joint as Principal Etiologic Factor in Glossodynia**—During the observation of ninety patients with neuralgia and aural symptoms associated with destruction and disturbed function of the temporomandibular joint, Costen found ten to have burning pain about the tongue and pharynx. One varied the description to a prickling sensation along the margin of the tongue. Complete relief was obtained in most of the cases after repositioning the lower jaw to increase its vertical dimension and bringing the condyle out of range of the auriculotemporal and chorda tympani nerves.

Irritation of these nerves, especially the auriculotemporal, sufficient to produce reflex pains in the remaining branches of the mandibular nerve is proposed as the principal etiologic factor in the production of "burning tongue" or "neurosis of the mouth" without gross lesions.

**Treatment of Web in Larynx**—Iglauer applied the principle of the two stage operation sometimes employed by the general surgeon for the treatment of syndactylism in a case of a cicatricial web between the vocal cords. This consists in passing a wire through the proximal portion of the web between the fingers and leaving the wire in place until the epithelium has grown through from both surfaces, forming a new commissure. At the second operation the web between the fingers is completely divided, the epithelium-lined commissure preventing adhesions from reforming.

### Arch. of Physical Therapy, X-Ray, Radium, Chicago

16 641-704 (Nov.) 1935

- Selective Heat Production by Ultra Short (Hertzian) Waves A Bachem Chicago—p 645  
Treatment of Acne Vulgaris with Especial Reference to Physical Therapy E P Zeisler Chicago—p 651  
Fundamentals and Indications of Short Wave Therapy, Fulguration and Coagulation L H Stebock Vienna Austria—p 657  
Thalassotherapy C I Singer Long Beach, Long Island N Y—p 662  
Physical Therapy in Angina Pectoris and Coronary Occlusion H D Holman Mason City, Iowa—p 667  
Control of Pain and Hemorrhage in Electrosurgical Tonsillectomy L J G Silvers New York—p 671  
Physical Therapy in Allergic Diseases H B Wilmer and M M Miller Philadelphia—p 674  
Physical Therapy in Fractures V W M Wright, Philadelphia—p 678

### Delaware State Medical Journal, Wilmington

7 219-236 (Nov.) 1935

- \*Specific Antiserum in Treatment of Tularemia Two Unusual Cases Treated Successfully with Commercial Antiserum L B Flinn, Wilmington—p 219  
Relationship of Dental Foci of Infection to Ocular Pathology S M Sosnov Wilmington—p 222  
Repairers of the Living Bellows E. Podolsky, Brooklyn—p 226

**Specific Antiserum in Treatment of Tularemia**—Flinn cites two cases of tularemia treated with the first specific antiserum commercially available. The first patient, aged 21, presenting an ulceroglandular type of tularemia, was treated with 30 cc of commercial antiserum (horse), beginning on the eighteenth day of the disease, and was well six weeks after the onset. The other patient, aged 58, having a severe tularemia pneumonia, treated with 90 cc. of commercial antiserum (horse), beginning on the fourteenth day of the illness, returned to work within three three months, he had a relapse two months later, which subsided immediately following 30 cc. of goat serum.

### Florida Medical Association Journal, Jacksonville

22: 189-238 (Nov.) 1935

- The Tonsil Problem L. C. Ingram Orlando—p 203  
Partial Stomach Resection After Method Advocated and Practiced by Professor Hans Finsterer of Vienna M Smith Miami—p 209  
Management of Acute Head Injuries J M Dell Jr Gainesville—p 214  
Hydranion Habitual Case Report C. D. Hoffmann Orlando—p 215

### Johns Hopkins Hospital Bulletin, Baltimore

67: 247-316 (Nov.) 1935

- \*Experimental Studies on Pathogenesis of Epituberculosis Ella Hutzler Oppenheimer Baltimore—p 247  
Studies on Adrenal \ Experimental Studies on Replacement Therapy in Adrenal Insufficiency A Grollman and W M Firor, Baltimore—p 281  
Acute Staphylococcal Infection of Jejunum and Ileum S S Blackman Jr Baltimore—p 289  
Epidemic Meningococcus Meningitis Analysis of Twenty Six Cases Twenty-One of Which Occurred in the Spring of 1935 W S Tillet and T M Brown Baltimore—p 297

**Studies on Pathogenesis of Epituberculosis**—Oppenheimer produced experimentally a roentgen lesion, quite like that of so-called epituberculosis or benign resolving pulmonary tuberculosis of childhood, by introducing dead tubercle bacilli into the bronchus of hypersensitive rabbits. This shadow, which

exhibited the form and clinical course of that in human epituberculosis, reached its maximal density in from two to four weeks and then gradually cleared completely, clearing often began at the periphery, as is common in the case of the shadow of epituberculosis. No similar roentgen shadow occurred in nonallergic animals subjected to the same procedure. Immunized, hypersensitive animals injected intratracheally with living tubercle bacilli developed a similar shadow, which, however, spread progressively to a fatal termination. The macroscopic appearance of this epituberculosis-like shadow, studied at different intervals, was that of a tuberculous pneumonia which clears by resolution and organization. After resolution, strands of nonspecific scar tissue may be found at the site. Histologically, the lesion produced is that of a typical tuberculous pneumonia with epithelioid and giant cells, lymphocytes and caseation. Tubercle bacilli or their fragments could be stained as long as the reaction remained. Later, peripheral organization, absorption of the exudate and nonspecific scar formation occurred. The observations demonstrate that the peculiar characteristics of epituberculosis can be reproduced by the discharge of dead bacilli into the lung of an allergic individual by way of a bronchus. The author suggests that characteristic epituberculosis represents in many cases, if not in all, the result of erosion of a bronchus by a caseous lymph node containing relatively few viable bacilli and that the characteristic shadow represents a tuberculous pneumonia produced by the discharge of caseous material impregnated with tuberculo-protein and dead bacilli, though containing some living bacilli, into the lung of a body sensitized and immunized by the previous infection. The various and clinically familiar shades between the benign retrogressive wedge-shaped area of epituberculosis and the wedge-shaped rapidly progressive area of active tuberculosis may be expected to occur depending on the balance between the number of viable bacilli in the discharging node and the degree of acquired resistance and hypersensitivity of the body.

### Journal of Bacteriology, Baltimore

30: 447-546 (Nov.) 1935

- Electrophoretic Phenomena of Bacteria. II. Electrophoretic Velocities of Virulent and Nonvirulent *Corynebacterium Diphtheriae*. C. W. Buggs and R. G. Green. Minneapolis—p. 447
- Id. III. Electrophoretic Velocity of Bacteria in Relation to Growth Senescence and Death. C. W. Buggs and R. G. Green. Minneapolis—p. 453
- Serologic Variant of *Salmonella Aertrycke* Isolated from Pigeons. P. R. Edwards. Lexington, Ky.—p. 465
- Influence of Heat and Storage on Electrophoretic Migration Velocities of Various Micro-Organisms. K. P. Doxois and F. Hachtel. Baltimore—p. 473
- \*Comparison of Eijkman Test with Other Tests for Determining *Escherichia Coli* in Sewage. A. A. Hajna and C. A. Perry. Baltimore—p. 479
- Studies on Cultural Characteristics of *Pasteurella Tularensis*. Cora M. Downs and G. C. Bond. Lawrence-Kansas City, Kan.—p. 485
- Amylase of *Clostridium Acetobutylicum*. W. W. Johnston and A. M. Wynne. Toronto—p. 491
- Action of Radiation in Extreme Ultraviolet on *Bacillus Subtilis* Spores. I. H. Blank and W. Arnold. Boston—p. 503
- Inhibition of Growth of *Bacillus Subtilis* by Ultraviolet Irradiated Carbohydrates. I. H. Blank and W. Arnold. Boston—p. 507
- Studies on Cultural Requirements of Bacteria. VI. *Diphtheria Bacillus*. J. H. Mueller. Boston—p. 513
- Id. VII. Amino Acid Requirements for Park Williams Number Eight Strain of *Diphtheria*. J. H. Mueller and I. Kapnick. Boston—p. 525
- Biologic Classification of *Klebsiella Ozenae*. L. A. Julanella with technical assistance of W. Smith. St. Louis—p. 535

**Tests for Determining *Escherichia Coli* in Sewage.**—Hajna and Perry used the Eijkman method in the examination of raw sewage, effluent and sludge. High dilutions of sewage were made to insure that the last two or three dilutions would be negative, a necessary step in order to calculate most probable numbers with accuracy. All cultures were incubated at 37 C. for about twenty-four and forty-eight hours, except the Eijkman tubes, which were incubated at 46 C. Eosin-methylene blue-agar plates were streaked from tubes and after twenty-four and forty-eight hours incubation one or two typical colonies from each plate were inoculated into citrate, Eijkman and lactose broth for confirmation. Cultures which produced typical colonies on eosin-methylene blue-agar plates and formed gas in lactose and Eijkman broths but which were unable to grow in the citrate medium of Koser (1923) were considered

*Escherichia coli*. In comparing certain mediums that have been proposed as possible substitutes for standard lactose broth with their modified Eijkman medium for relative efficiency in the isolation of *Escherichia coli* from raw sewage, they found the Eijkman test to be superior to standard lactose broth, buffered lactose broth, Ritter's, Salle's, Dominick-Lauter's, and Stark's and England's broths both in the number of isolations of *Escherichia coli* made and in the number of gas tubes confirmed for *Escherichia coli*. The relative efficiency of standard lactose broth and the modified Eijkman broth for the isolation of *Escherichia coli* from raw sewage, sewage effluent and sludge was tested. *Escherichia coli* was recovered from more of the tubes of Eijkman broth than of lactose except in the case of sewage sludge. Four and five-tenths per cent more of the lactose broth tubes inoculated with sludge were confirmed for *Escherichia coli*. A much larger percentage of the Eijkman tubes with gas were confirmed in all instances.

### Journal of General Physiology, New York

19: 199-396 (Nov. 20) 1935. Partial Index

- Relation Between Litter Size, Birth Weight and Rate of Growth in Mice. W. J. Crozier and E. V. Euzmann. Cambridge, Mass.—p. 249
- Alleged Effect of Electrical Stimulation on Metabolism of Red Cell Suspensions. E. Ponder and J. Macleod. Cold Spring Harbor, Long Island, N. Y.—p. 265
- Acetylation of Tyrosine in Pepsin. R. M. Herriott. Princeton, N. J.—p. 283
- Dark Adaptation of Retinal Fields of Different Size and Location. S. Hecht, C. Haig and G. Wald. New York—p. 321
- Carotenoids and Visual Cycle. G. Wald. Boston—p. 351
- Formulation of Serologic Flocculation Rate in Region of Considerable Antibody Excess. S. B. Hooker and W. C. Boyd. Boston—p. 373
- Immunologic Specificity of Euglobulin and Pseudoglobulin Fractions of Horse and Human Serum. T. Harris and H. Eagle. Philadelphia—p. 383

### Journal of Nutrition, Philadelphia

10: 461-578 (Nov. 10) 1935

- Utilization of Energy Producing Nutrient and Protein as Affected by Individual Nutrient Deficiencies. III. Effects of Plane of Protein Intake. E. B. Forbes, R. W. Swift, A. Black and O. J. Kahleberg. State College, Pa.—p. 461
- \*Pathologic Skin Changes in Tail of Albino Rat on Diet Deficient in Vitamin G. Susan Gower Smith and D. H. Sprunt. Durham, N. C.—p. 481
- Human Iodine Balance. Vera V. Cole and G. M. Curtis. Columbus, Ohio—p. 493
- Utilization of Inulin for Growth by Young White Rat. Adelaide Bendaña and H. B. Lewis. Ann Arbor, Mich.—p. 507
- Effect of Cereal Diets on Composition of Body Fat of Rat. H. S. Oleit, W. E. Anderson and L. B. Mendel. New Haven, Conn.—p. 517
- Influence of Diet on Glucose Tolerance of Dog. Esther M. Gressheimer and F. W. Hoffbauer. Minneapolis—p. 525
- Adequacy of Simplified Rations for Complete Life Cycle of Chick. A. G. Hogan, R. V. Boucher and H. L. Kempster. Columbia, Mo.—p. 535
- Effect of One Per Cent Cod Liver Oil on Rat, with Particular Reference to Thyroid Gland. C. B. Freudenberger and F. W. Clausen. Salt Lake City—p. 549
- Relation of Rate of Growth to Diet. III. Comparison of Stock Rations Used in Breeding Colony at the Connecticut Agricultural Experiment Station. L. B. Mendel and Rebecca B. Hubbell, with assistance of Luva Francis. New Haven, Conn.—p. 557
- Comparative Rachitogenic Property of Oats and Corn. L. L. Lachet and L. S. Palmer. St. Paul—p. 565

**Changes in Rats on Diet Deficient in Vitamin G.**—Smith and Sprunt present evidence to show that an atrophy of the sebaceous glands and thinning of the epithelium together with hyalinization of the connective tissue occurs in the tails of rats subsisting on a diet deficient in the vitamin G complex. This does not occur in rats on the same diet supplemented with autoclaved yeast. After the atrophy has occurred in any vitamin G deficient rat, as demonstrated by biopsy section, there is prompt and complete regeneration on the addition of autoclaved yeast to the diet. The authors cannot say that this characteristic change is specific for vitamin G, as it occurred also to some extent in the rats on vitamin A deficient diets and in the rats on vitamin B deficient diets in their control experiments. They give three possible explanations for the pathologic changes observed: they may be due to chronic inanition, in the case of the vitamin A and vitamin B deficiencies there may be a secondary shortage of vitamin G due to inanition or faulty absorption, and vitamins A, B and G may all be necessary for the protection of the tissues involved. Under these circumstances the pathologic changes described may occur when any one of them is lacking. Experiments are now in progress to test these hypo-

thetical explanations. It is impossible for the authors to state what factor or combination of factors is responsible for maintaining the characteristic structure of the sebaceous glands and epithelium. The fact that abnormal sebaceous secretion has been reported in cases of human pellagra and the results of the present studies lend some support to the idea of vitamin G deficiency.

### Journal of Urology, Baltimore

34 349-498 (Nov.) 1935

- \*Transuretero-Ureteral Anastomosis. Report of Clinical Case. C. C. Higgins, Cleveland.—p. 349
- Gigantic Hydronephrosis. W. O. Wilder and L. H. Doolittle. Springfield, Mass.—p. 356
- Experimental Study of Bladder Disturbances Analogous to Those of Tabes Dorsalis. J. E. Dees and O. R. Langworthy. Baltimore.—p. 359
- Traumatic Rupture of Urethra. Study of Thirty Seven Cases. W. R. Dezell and A. R. Stevens. New York.—p. 372
- Primary Carcinoma of Urethra. Report of Case Occurring in Male. A. McNally. Chicago.—p. 384
- Procaïne Reaction Following Injection in Traumatized Urethra. E. M. Bingham. Riverside, Calif.—p. 391
- Anesthetic Lubricant for Urethra. R. M. Nesbit and R. K. Ratliff. Ann Arbor, Mich.—p. 394
- Endoscopic Excision of Prostatic Obstruction. C. W. Collings. New York.—p. 396
- Some Observations Following Prostatic Resection. W. R. Hornaday, Des Moines, Iowa.—p. 401
- \*Recurrence of Urinary Obstruction Following Transurethral Prostatic Resection. G. J. Thompson. Rochester, Minn.—p. 405
- Uncontrollable Hemorrhage from Benign Prostatic Enlargement. Report of Case. C. H. deT. Shivers, Atlantic City, N. J.—p. 417
- Present Status of Prostatic Resection. R. V. Day. Los Angeles.—p. 428
- Study of Changes in Trigon During Resection. New Cause of Urinary Extravasation and Pelvic Cellulitis. D. F. Rindick. Chicago.—p. 437
- \*New Method for Relief of Hydrocele. G. R. Livermore. Memphis, Tenn.—p. 446
- Abdominoscrotal Hydrocele. R. C. Tanzer. Cooperstown, N. Y.—p. 447
- Consideration of Testicular Prosthesis. J. D. Barney. Boston.—p. 453
- Selective Irradiation in Management of Teratoma Testis. R. S. Ferguson. New York.—p. 458
- Radiation Treatment of Tumors of Testicle. G. G. Smith, R. Dresser and E. R. Mintz. Boston.—p. 462
- Torsion of Spermatic Cord. W. H. Kinney. Philadelphia.—p. 470
- Epididymo-Orchitis in Industrial Surgery. J. J. Crane. Los Angeles.—p. 477
- Advantages of Closed Epididymotomy. M. S. Rohde. New York.—p. 480
- Microcystometer. Portable Instrument for Cystometry and Sphincterometry. I. Simons. New York.—p. 493

**Transuretero-Ureteral Anastomosis.**—Higgins presents a case in which transuretero-ureteral anastomosis has been performed, furnishing the first proof that the operation is physiologically successful in man. The problem presented in this case was so unusual that it was hard to decide what surgical procedure should be employed. The patient, a man aged 25, had begun to suffer from frequency, urgency and nocturia about one year before the author's examination. Pain had been present in the region of the right kidney while he was urinating. Four or five months after these symptoms appeared, a cystotomy had been performed by another surgeon. At this operation several small calculi were removed from the bladder and a large diverticulum which contained stones was found and thus involved the right side of the bladder. The stones were removed but the diverticulum was left intact. The symptoms persisted after operation. Convalescence after anastomosis was performed was uneventful. No urinary leakage occurred and the patient was discharged twelve days after operation. An intravenous urogram after operation showed prompt initial function of both kidneys which later became a little slower on the left side. The left ureter appeared normal below the pelvis of the kidney. Postoperative observations a year and a half after operation showed both kidneys to be functioning well with no evidence of obstruction at the site of the ureteral anastomosis. At the present time the patient has no symptoms of urinary disturbance. The author concludes that although such a procedure may seldom be indicated it is an anatomic and physiologic possibility and adds another conservative technique to the armamentarium of urologic surgery.

**Urinary Obstruction Following Transurethral Prostatic Resection.**—Thompson points out that of 1,694 patients subjected to transurethral resection at the Mayo Clinic from January 1913 to January 1935, forty-nine have returned and have again been operated on for the relief of urinary obstruction.

sixteen patients suffered originally from carcinoma of the prostate, ten from a median bar formation or contracture of the vesical neck and twenty-three from adenomatous enlargement of the type formerly treated by prostatectomy. The ten patients who suffered from a median bar formation or contracture of the vesical neck belong to the group for which punch operations have been acknowledged to be the operation of choice, symptoms of urinary obstruction recur in a greater proportion of cases of this type than in cases in which there is adenomatous enlargement of the prostate. The twenty-three patients with adenomatous hyperplasia probably all had a certain amount of regrowth of prostatic tissue, although six of them said that they had never been completely relieved by the first operation, in five other cases, definite new growths could be recognized by cystoscopy. In every case in which there was a recurrence, the stay in the hospital following the second operation was shorter than it was after the primary operation was performed, without exception a smooth convalescence occurred. Recurrent urinary obstruction following transurethral resection will be infrequent if the primary operation is thorough, if a good functional result is not immediately obtained, it is best to remove more tissue without delay. Greater deformity of the prostatic urethra results from suprapubic or perineal prostatectomy than from prostatic resection, recurrent intra-urethral proliferation of adenomatous tissue is little if any greater after transurethral resection than after prostatectomy. The percentage of cases in which urinary obstruction has recurred after transurethral resection is much less than has been predicted.

**Method for Relief of Hydrocele.**—Livermore's method is performed as follows. The hydrocele is aspirated with a large gallbladder trocar. After the fluid has been evacuated, narrow shoestring tape is saturated with a solution of sodium morrhuate (prepared as for injecting varicose veins) and packed loosely through the cannula into the hydrocele sac, care being exercised to insert the tape throughout the length and breadth of the cavity. A gauze dressing and a suspensory bandage are then applied. The tape is not disturbed for twenty-four hours, when about 2 inches is removed and cut off. Each day thereafter from one-half to 1 inch (depending on the length of tape inserted) is removed and cut off till the seventh day, when it is removed entirely. The success of this method depends on the care with which the tape is inserted, its thorough saturation with the solution and its intermittent daily removal. A local anesthetic and a small skin incision make it practically a painless procedure and there is little complaint at the fractional removal of the tape.

### New England Journal of Medicine, Boston

213: 1005-1056 (Nov. 21) 1935

- Torsion of Appendix Testis (Hydatid of Morgagni). Report of Two Cases. J. S. Rhodes, Boston.—p. 1005
- \*Experimental and Clinical Observations on Urinary Calculi. C. C. Higgins, Cleveland.—p. 1007
- Review of Variety of Poisons Which Have Caused Death in the Massachusetts State Hospitals for Mental Disease. Anna M. Allen, Boston.—p. 1013
- Clinical Lecture on Migraine. A. H. Gordon, Boston.—p. 1017
- \*Systolic Gallop Rhythm. Clinical Study. W. P. Thompson and S. A. Levine, Boston.—p. 1021
- Theelin Therapy in Vulvovaginitis. R. B. Phillips, Boston.—p. 1026

213: 1057-1108 (Nov. 28) 1935

- Some Obstetric Aspects of Cardiac Disease Complicated by Pregnancy. H. B. Nelson and M. F. Eades, Boston.—p. 1057
- Whooping Cough and Its Prevention. L. Sauer, Evanston, Ill.—p. 1061
- Modified Technique for Stereoscopic Examination of Skull by X-Ray. Z. W. Colson, Lawrence, Mass.—p. 1067
- Progress in Tuberculosis 1934-1935. J. B. Hawes, 2d and M. J. Stone, Boston.—p. 1087

**Urinary Calculi.**—Higgins observed twenty-three cases in which stones that were too large to pass spontaneously from the kidney have undergone complete solution as indicated by radiographic studies and by pyelography. Seventeen patients passed calculi at frequent intervals. After the high vitamin A acid-ash diet had been followed, all have been entirely free from symptoms for more than two years. During the last two and a half years, the author has had only one instance of recurrent stone formation following operative removal of stones from the



upper urinary tract, the patient did not follow the routine that was outlined for him. The high vitamin A acid-ash diet is prescribed in addition to the other therapeutic measures that he has always used, such as eradication of infection and elimination of stasis. Since this regimen has been used the incidence of recurrent stone formation has been reduced from 164 to 47 per cent in his cases. He has also observed cases in which the stones have diminished in size, but insufficient time has elapsed to warrant their complete solution. In other cases he has been unable as yet to note any decrease in the size of the calculi although the patients have followed the diet for a period of from four to five months. It is impossible to determine whether a noticeable decrease in the size of the stones will occur after the diet has been followed for longer periods. He believes, however, that conservative treatment should be attempted if the stone is not producing definite renal damage and the patient is not disabled by pain. He is certain that, if in addition to the other therapeutic measures which have been used previously a carefully planned diet is prescribed to which vitamin A is added postoperatively, the recurrent formation of stones can be reduced to a minimum.

**Systolic Gallop Rhythm.**—Thompson and Levine saw thirty-five patients with systolic gallop rhythm over a period of eleven years, representing 16 per cent of all patients with gallop rhythm encountered during this period. In most cases the extra sound in systolic gallop rhythm has a quality resembling the normal first sound. Its maximal intensity is usually in the region of the apex of the heart. Its intensity is variable in different patients and occasionally in the same patient from time to time. It may alter its intensity or even disappear with a change in the position assumed by the patient, although generally it is loudest in the recumbent position. It may also appear or disappear without apparent cause. Four of the group had no cardiovascular disease, five had coronary artery disease, two of these and six others had arterial hypertension, usually mild in degree, and one had bundle-branch block without other evidence of cardiovascular disease. Only two patients had cardiac enlargement. Significant electrocardiographic abnormalities were absent except in four of those with coronary disease and the one with bundle-branch block. No real incapacitation was present except in those with coronary artery disease. The extremes of age were 11 and 71 years. Males were predominant in the group with cardiovascular disease, while there was no difference in those without it. None of the patients having cardiovascular disease are dead, while 46 per cent with diastolic gallop observed over the same period are dead. The rarity of cardiac enlargement and physical incapacitation, the slight degree of arterial hypertension in those who had it and the complete absence of congestive signs all point to the benignity of systolic gallop rhythm. Systolic gallop rhythm occurred predominantly in "nervous" people.

### New York State Journal of Medicine, New York

35: 1123 1182 (Nov 15) 1935

- Campaign to Reduce Death Rate of Pneumonia in New York State. R. L. Cecil New York.—p 1123  
 Raynaud's Disease Hypothesis as to Its Cause A. F. Kraetzer New York.—p 1130  
 Cancer of the Breast. J. J. Morton and S. J. Stabins, Rochester.—p 1137  
 Acoustic Neuromas in Stage of Normal Intracranial Pressure Analysis of Thirteen Early and Late Cases W. B. Hamby, Buffalo.—p 1143  
 Modified Mikulicz Operation as Opposed to One-Stage Procedure for Carcinoma of Colon C. V. Burt New York.—p 1148  
 Prognosis of Cancer of Cervix Treated by Irradiation N. B. Sackett New York.—p 1153  
 Cigarette Smoke as Health Hazard. H. Sharlit New York.—p 1159

### Public Health Reports, Washington, D. C.

50: 1569 1606 (Nov 8) 1935

- Rat Leprosy Observations Concerning Transmission of Infection Through the Nose. N. E. Wayson and E. Masunaga.—p 1576  
 Studies of Sewage Purification III Clarification of Sewage Review E. J. Thernault.—p 1581  
 50 1607 1638 (Nov 15) 1935  
 Sickness Among Male Industrial Employees During Second Quarter and First Half of 1935 D. K. Brundage.—p 1607  
 Physical Condition and Unemployment. H. S. Diehl.—p 1610  
 Microscopic Appearance of Experimentally Produced Dust Nodules in Peritoneum. J. W. Miller and R. R. Sayers.—p 1619

### Rhode Island Medical Journal, Providence

18: 161 178 (Nov) 1935

- Some Clinical Aspects of Deficiency Diseases in Adults C. S. Keefer Boston.—p 161  
 The New Deal in Medicine M. W. Thewlis, Wakefield.—p 165  
 The Doctor as a Health Educator W. W. Bauer Chicago.—p 168.

### Science, New York

82: 469-498 (Nov 22) 1935

- Harvard in Medical Education W. A. Jessup New York.—p 469  
 Development of Clinical Subjects as Contributing to University Work. E. J. Du Bois New York.—p 472  
 Relation of Medicine to Fundamental Sciences L. J. Henderson, Boston.—p 477  
 Protection from Mosquito Bites in Outdoor Gatherings J. M. Ginsburg New York.—p 490  
 \*Further Evidence for Presence of Toxic Factor in Pernicious Anemia. G. E. Wakerlin and H. D. Bruner Louisville Ky.—p 494  
 \*Some Observations on Ultraviolet Irradiated Amebas W. A. Black, Berkeley San Francisco.—p 495  
 Contribution to Pharmacology of Physostigmine. C. R. Lingard J. M. Dille and T. Koppányi, Washington, D. C.—p 497

**Toxic Factor in Pernicious Anemia.**—Wakerlin and Bruner examined the urines of two treated pernicious anemia patients and have found the toxic, reticulocyte decreasing substance absent. The concentration of the reticulocyte stimulating principle in these two urines was definitely decreased. Urine from untreated patients with pernicious anemia contains both a thermolabile, comparatively toxic, reticulocyte decreasing factor and a partially thermostable, relatively nontoxic, reticulocyte stimulating principle for the pigeon. Normal human urine contains the latter but not the former, or at least not in the quantities of urine used. What relation the urinary reticulocyte decreasing principle bears to the toxic substances reported by Macht, Mermod and Dock, and Kingisep, as present in the plasma of untreated pernicious anemia patients is largely speculative at present. If the authors' impression that the principle acts through depressing erythropoiesis in the bone marrow should prove to be correct, the production of experimental pernicious anemia in mammals by the separation and administration of sufficient quantities of the reticulocyte decreasing factor is not beyond the realm of possibility.

**Observations on Ultraviolet Irradiated Amebas.**—Preliminary to a study of the manner in which various solutions of sodium chloride modify the action of ultraviolet radiation on protoplasm, Black did a number of exploratory experiments on *Amoeba proteus*. His observations on irradiated amebas indicate that digestion of food is stopped by ultraviolet rays and that cessation occurs with the appearance of morphologic symptoms of impairment. *Amoeba proteus* shows negative phototropism toward ultraviolet radiation. The cell membrane of irradiated amebas is relatively inextensible.

### Western J. Surg., Obst. & Gynecology, Portland, Ore.

43: 597 660 (Nov) 1935

- Mucocoele of Appendix as Complication of Pelvic Pathology T. F. Bell, Oakland Calif.—p 597  
 Renal Dystopia H. A. R. Kreutzmann San Francisco.—p 605  
 Treatment of Carbuncles of Face. H. P. Totten Los Angeles.—p 609  
 Resection of Mobile Portions of Colon by Mikulicz Method Report of Five Successful Cases A. H. Noehren Buffalo.—p 618  
 \*Calcinosis Universalis E. G. Ramsdell White Plains N. Y.—p 624  
 Thyroid and Liver C. H. Frazier and R. B. Brown Philadelphia.—p 636  
 Prevention and Treatment of Gout Address to the Public and the Profession R. M. Wilder Rochester Minn.—p 647

**Universal Calcinosis.**—Ramsdell discusses a case of universal calcinosis in a girl, aged 10, in which improvement of the vasospasm and the absorption and melting of the calcium deposits began almost immediately following a unilateral thyroidectomy and attempted parathyroidectomy. The patient presented a long febrile course associated with marked loss of weight, scleroderma, the deposit of enormous amounts of calcium in the subcutaneous tissues of the body, and marked vasospasm of the peripheral vascular system suggesting a Raynaud's type with normal blood calcium and blood phosphorus. At operation hyperplasia of the thyroid was observed, but no demonstrable pathologic changes of the parathyroid were found. Universal calcinosis, scleroderma and Raynaud's disease are related to a similar constitutional anomaly based on peculiar but little understood changes in the calcium metabolism. Some disturbance in the function of the thyroid and parathyroid is probably the underlying cause.

# FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Dermatology and Syphilis, London

47: 441-496 (Nov.) 1935

- \*Occupational Argyria J M Harker and D Hunter—p 441
- Angioma Serpiginosum H Montgomery and R J Bailey—p 456
- Posttraumatic Angioma F Foldvr—p 463

**Occupational Argyria**—Harker and Hunter discuss sixteen cases of occupational argyria, seven generalized and nine localized. Six of the workers showing the generalized condition had been employed for years in the manufacture of silver nitrate. The seventh case was a maker of Christmas crackers. The processes that were responsible for their disfigurement are now obsolete and have been replaced by methods of manufacture little likely to give rise to further cases. The nine patients with the localized condition were silversmiths. Only four of the sixteen patients sought advice at the hospital. The other twelve were examined during visits to a firm of bullion refiners and to a firm of manufacturing silversmiths. Only in the case of the Christmas cracker maker was advice sought as to the cause of the discoloration of the skin. Two of the patients were admitted to the wards for investigation of conditions other than argyria. Each of these was a silver nitrate maker showing generalized argyria, and each died of a condition unrelated to the occupation followed. Full postmortem examinations were carried out. Occupations involving the risk of argyria can be divided into two groups. In the first group the workman handles a compound of silver, either the nitrate, the fulminate or the cyanide. These substances give rise to generalized argyria from inhalation and ingestion of the silver salt concerned. Such occupations include the manufacture of silver nitrate, the wrapping of lunar caustic pencils, Christmas cracker making, the silvering of glass beads, mirror plating, electroplating and photography. Owing to altered conditions in these industries, the risk of argyria has now practically disappeared. In the second group the workman handles metallic silver, small particles of which accidentally penetrate the exposed surface of the skin, giving rise to local argyria by a process equivalent to tattooing. Generalized argyria has been recorded in silversmiths, but it is rare. The occupations responsible are the filing, drilling, hammering, turning, engraving, polishing, forging, soldering and smelting of silver.

## British Medical Journal, London

2: 885-932 (Nov. 9) 1935

- Obesity: Etiology and Metabolism C G Lambie—p 885
- Treatment of Mammary Cancer H M Moran—p 889
- Strain of School Life on Girls During Early Menstrual Period D J G Johnston—p 892
- Treatment of Boils and Carbuncles Note P K Fraser—p 894
- Primary Axillary Vein Thrombosis A D Bellios and A W J Houghton—p 895
- Use of Alum Precipitated Toxoid in Diphtheria Immunization J E Haine—p 896
- Prevention of Diphtheria by 'One Shot' Method Using Alum Precipitated Toxoid M Naughten J H White and A Foley—p 898

2: 933-982 (Nov. 16) 1935

- Glaucoma with Especial Reference to Medical Aspects and Early Diagnosis H M Traquair—p 933
- \*Oil-Soluble Anesthetics in Rectal Surgery C N Morgan—p 938
- Differential Diagnosis and Treatment of Severe Anemia J C Matthews—p 943
- Hypoglycemia in the Neuroses M S Jones—p 945
- Incidence of Erysipelas J Riddell—p 946
- Biliary Peritonitis S Power—p 948

**Oil-Soluble Anesthetics in Rectal Surgery**—Morgan has found a 1.5 per cent base of procaine hydrochloride, 6 per cent butyl para aminobenzoate and 5 per cent benzyl alcohol in sterilized almond oil to be the best for the treatment of painful conditions in and around the anus. This solution owes its painlessness on injection to the adequate concentration of the procaine base and to the elimination of ether. Its prolonged anesthetic property is due partly to the slow rate of diffusion from the oil and partly to the prolonged action of the butylpara aminobenzoate. If the solution is sufficiently warmed and injected slowly, anesthesia is almost immediate. Anesthesia or hypoesthesia is produced for periods varying from seven to twenty-eight days or longer. Relaxation of the anal musculature is much greater and more prolonged. The preparation is

comparatively nontoxic, from 20 to 30 cc. may be injected without any general ill effect. In 100 cases there has been little or no pain on injection when it has been carried out slowly and carefully, and no severe after-pain has been encountered. Relaxation lasted from five to sixteen days. The length of the anesthesia and relaxation was proportional to the amount injected. There was no delay in healing of the wounds. In no case was there any severe reaction in the tissue, and no general toxic effects occurred.

## Medical Journal of Australia, Sydney

2: 569-610 (Oct. 26) 1935

- Some Clinical Observations on Blood Pressure and Their Practical Application with Especial Reference to Variation of Blood Pressure Readings in Two Arms R Southby—p 569
- \*Torulosis: Report of Case of Meningitis Due to *Torula Histolytica* W C Sawers and E. F. Thomson—p 581

**Meningitis Due to *Torula Histolytica***—Sawers and Thomson report a case of meningitis caused by *Torula histolytica*. The diagnosis is necessarily a laboratory function and, unless the possibility of such infection is borne in mind, the microscopic appearances of preparations from the cerebrospinal fluid may be overlooked and the presence of yeastlike colonies on cultivation may be attributed to contamination. The attempts at monkey inoculation were successful only by rather gross intracerebral injection, but the pathologic appearances obtained by this means corresponded closely with the description of human lesions. Clinically the recognized cases of torula infection usually involve the central nervous system, and the presence of meningitis most frequently calls attention to the condition. The consensus is that infection occurs through the air passages and lungs, with further spread by the blood stream and the lymphatics. In support of this there are records of torula being found in the lungs of several patients. In many other cases there was associated pulmonary disease, tuberculosis being found in six cases and terminal pneumonia being present in four. It may be that such pulmonary disease predisposes to torula infection by way of the pulmonary system. Other possible portals of entry must be considered: the esophagus, tongue, pharynx and tonsil. In three cases discussed by Fitchett and Weidman the association of Hodgkin's disease with torulosis has been observed. They demonstrated the presence of yeast organisms in enlarged lymph nodes from the head of the pancreas by animal inoculation. They bring forward the possibility of the intestine as a portal of entry. Johns and Attaway mention a case in which trauma over the scapula was followed by a deep mycotic infection, which healed many months before the onset of the typical meningitis. In their own case the initial lesion proved to be a small superficial granuloma that developed from a razor cut. Without careful examination the pathologic appearances may easily be mistaken for tuberculosis, and it is more than possible that many cases have been diagnosed as such.

## South African Medical Journal, Cape Town

9: 697-736 (Oct. 26) 1935

- Degeneration and Its Remedy A Jurriaanse—p 704
- Facts and Figures About South Africa's White Population A Piiper—p 713
- Housing Conditions T S Higgins—p 714

## Japanese Journal of Gastroenterology, Kyoto

7: 115-178 (Oct.) 1935

- Influences of Amino Acids and Choline on Pigment Excreting Function of Liver T Matsunura and A Kashimura—p 115
- Experimental Study on Formation of Gallstones Report I: Influences of Fat Soluble Vitamins Especially Vitamin A (Cod Liver Oil and "Blosterin") on Amounts of Potassium, Sodium, Calcium and Magnesium in the Blood T Maruno—p 120
- Studies on Invertase Report I: New Modified Method for Isolation and Purification of Invertase T Kozaki—p 125
- Id. Report II: Thermal Analysis of Invertase Action (1) General Test and Determination of Reaction Heat T Kozaki—p 135
- Id. Report III: Id. (2) Enzyme Amount and Reaction Velocity T Kozaki—p 148
- Id. Report IV: Id. (3) Sucrose Concentration and Reaction Velocity T Kozaki—p 154
- Id. Report V: Id. (4) Hydrogen Ion Concentration and Reaction Velocity T Kozaki—p 162
- Id. Report VI: Id. (5) Temperature and Reaction Velocity T Kozaki—p 167
- Id. Report VII: Theoretical Consideration of Invertase Action. T Kozaki—p 173

## Archives de Médecine des Enfants, Paris

38: 645 708 (Nov.) 1935

- Anorexia of Nursing P Lereboullet—p 645  
 \*Urinary Syndrome and Renal Function in Hematuric Nephritis of Children P Nobécourt and S B Briskas—p 660  
 Treatment of Diphtheria I H Alantar—p 676

**Hematuric Nephritis of Children.**—Nobécourt and Briskas studied twenty-six children (nineteen boys and seven girls) ranging in age from 5 to 13, who developed hematuric nephritis. The origin was rhinopharyngeal in nineteen (73 per cent), and in the remaining it was due to impetigo in two cases and paratyphoid infection in one, it followed antidiphtheritic serum in one and was undetermined in three. The disorder was characterized clinically by rapid onset, sometimes during the angina, sometimes ten days or two weeks later. Fever was usually marked but generally was lowered again after three or four days. In most of the cases the child was pale and fatigued. Headache, vomiting and diarrhea occurred sometimes. In general, the urine was diminished, colored, more or less reddened and cloudy. The urinary syndrome was complete at the onset and lasted only a few days or weeks. Edema was not frequent. Uremia was usual but transitory. The blood cholesterol and total lipoids were usually increased at the onset and became normal on recovery. There was no relation between the blood cholesterol and blood urea. The prognosis of these nephritides is generally favorable. Almost all the patients recover in some weeks or months.

## Presse Médicale, Paris

43: 1769 1792 (Nov. 13) 1935

- \*Granulotherapy A Lumière—p 1769  
 Study of Laboratory Rabies P Remlinger—p 1772  
 Application of Collapse Therapy and Aurotherapy to Pulmonary Tuberculosis M Blanchard—p 1775

**Granulotherapy.**—Lumière discusses the mode of action of carbon in infectious processes. He believes that intravenous injection of carbon produces a hyperleukocytosis which corresponds approximately to double the original number. This leukocytosis is established a few hours after the injection and reaches its maximum from about six to ten hours after administration and usually ceases after twenty-four hours. Daily injections of small quantities give approximately the same results as large doses. Finally it seems that the hyperleukocytosis lasts somewhat longer when preparations of finely divided carbons are used. The most interesting feature of histologic examination of tissues when this procedure has been carried out is that the fixation of carbon particles seems to be final. Three months after their introduction they are found disseminated in the organs just as much as on the day after their injection. He points out that, since carbon has no reaction except in a mechanical way, other substances ought to behave similarly if their physical form is analogous. For other combinations, possibly therapeutic agents, he proposes the name of granulotherapy.

## Revue Française de Pédiatrie, Paris

11 545 663 (No 5) 1935

- Purulent Pleuritis in Children One Thousand Four Hundred and Fifty Cases M Michalowicz—p 545  
 Mental Future of Children with Sydenham's Chorea E Lesné C Launay and P Guillaum—p 583  
 Results of Vacations and Recreation Cnres of Children E Schlesinger—p 593  
 Treatment of Infantile Bronchopneumonia by Blood Transfusions C Cohen E Schellinck and L. Maryssael—p 603  
 Study of Hemotherapy in Pediatric Practice. M Schachter—p 611  
 \*Clinical Value of Albuminuria and Cylindruria in Digestive Disorders of Nurslings P Rohmer and B Tassovatz—p 617  
 \*Bilirubinemia in Cerebrospinal Meningitis E. E Katzmam and E P Gamaley—p 630  
 Treatment of Acute Disorders of Nutrition by Diet of Raw Apples Moro-Heisler Method N A Zuckermann—p 637  
 Dextrose in Treatment of Toxic Processes in Children P Ervin and E Jolkwer—p 643

**Albuminuria and Cylindruria in Digestive Disorders.**

Rohmer and Tassovatz studied the relations between the degree of renal damage as measured by the albuminuria and cylindruria and the course of acute or subacute digestive disturbances of nurslings. As a preliminary they made systematic examinations

of thirty patients with acute or subacute nondigestive infections. From this they concluded that febrile albuminuria is generally slight and that there are relatively few casts. Often signs of organic nephritis are found, especially abundant albumin and red or white blood cells. The renal symptoms are not influenced by liquid diet. In the digestive disturbances the albuminuria and cylindruria develop parallel to the intensity of the diarrhea, and the cylindruria predominates over the albuminuria. They conclude that study of these symptoms, especially cylindruria, is of some interest in the diagnosis, prognosis and conduct of treatment since they so closely reflect the gravity of the case. The urinary syndrome depends to some extent on the age of the patient, being encountered most frequently in the premature and in infants less than 5 months of age. The persistence and reappearance of the urinary signs indicate that the dietetic treatment is ineffective or poorly conducted or that the causative agent is still operative.

**Bilirubinemia in Cerebrospinal Meningitis.**—Katzmann and Gamaley made 101 qualitative and ninety four quantitative bilirubin determinations on seventy-two patients with cerebrospinal meningitis. The blood was drawn at the beginning, the middle and the end of the disease. In the majority of cases an indirect reaction of variable intensity was observed. In twelve, however, it was not obtained. The direct reaction was found in four cases with general toxic conditions and hypertrophied livers. The quantitative estimation in the cerebrospinal fluid in severe cases with pleocytosis never exceeded 16 mg per hundred cubic centimeters. As the condition improved it rose to 6.25 mg. This concentration, they believe, is explained by a state of functional inhibition of the reticulo-endothelial system in the production of bilirubin.

## Schweizerische medizinische Wochenschrift, Basel

65 1109 1132 (Nov. 23) 1935

- Dependence of Vitamin and Hormone Requirements on Certain Conditions E Abderhalden—p 1109  
 Clinical and Physiologic Results of Cerebral Angiography E. Menz—p 1112  
 Role of Experimental Studies in Problem of Tumors M. Askary—p 1116  
 \*Reposition of Incarcerated Meniscus J. Poult—p 1120  
 Menopausal Syndrome Its Pathogenesis and Therapy E. W. Winter—p 1121  
 Relations Between Refraction of Eyes and Development of Brain E. Braun—p 1124

**Reposition of Incarcerated Meniscus.**—Poult points out that the injury referred to as luxation of the meniscus develops as the result of a tear at the site of insertion or as the result of a rupture of one of the two semilunar cartilages in the knee joint. The injury usually involves the internal cartilage. A luxation takes place when the half or completely detached portion becomes diverted from its normal position, an incarceration takes place if the dislocated portion becomes wedged between the articular surfaces of the condyles. In the latter condition the patient notices that he is unable to stretch or bend his knee. Incarceration of the meniscus is characterized by fixation in semiflexion. The reposition in these cases differs from that of other luxations in that the meniscus is inaccessible to mechanical measures, such as traction, pressure, turning or leverage. In many cases the patient himself is able to overcome the incarceration by swinging or dangling the member. In apparently mild cases it is therefore advisable to let the patient himself try the reposition. The patient is told to sit on the edge of a solid table, to grasp his thigh near the knee with both hands and to swing and dangle the member while all the muscles of the leg are completely relaxed. If the patient does not succeed, the physician must help. It is necessary to watch at what angle the knee is fixed and what rotation position it assumes. This position must be the least incarcerating and therefore the most advantageous for the reposition. The patient is placed on a low bed and is told to relax all muscles. The physician takes the leg under his arm, grasps the leg near the knee, flexes the thigh at the hip joint to the vertical position, lifts the thigh and pelvis from the bed while preserving the favorable angle position of the knee, and dangles the thigh and pelvis downward without giving the knee too much free movement and without interfering with the slight outward rotation of the leg. The success of the reposition is

indicated by the fact that the injured knee can again be flexed and stretched. Occasionally this is accomplished at once, however, in most instances the reposition takes place gradually. The exertion of great force should be avoided, for the continuation of the dangling movements will usually have the desired effect. After reposition has taken place, rotation should be avoided for a while, because it may lead to renewed incarceration. It may be advisable to put on an extension splint for a few days.

### Polichinco, Rome

42: 2255-2298 (Nov. 18) 1935 Partial Index

\*Intra Arterial Injections in Diseases of the Limbs. V. Lucarelli—p. 2255

Perforations in Typhoid. S. Franco—p. 2264

**Intra-Arterial Injections in Diseases of Limbs.**—Lucarelli treated ten patients suffering from acute and chronic inflammations of the limbs with intra-arterial injections of a solution of 1 Gm of gentian violet, 10 Gm of phenol and 100 Gm of water. Phlegmons, paronychia and bone fistulas that usually require surgical intervention were successfully treated by these injections. The treatment had a beneficial and rapid effect on pain, fever and inflammatory and septic processes. The technic consists in steadying the brachial artery in the anterior and internal region of the fold of the elbow or the femoral artery in the fold of the groin with the index and middle fingers of the left hand and injecting the solution in the direction of the arterial current or against it holding the needle parallel with the vessel. Care is taken not to lacerate the artery, perforate it on the opposite side or wound the endothelium. The injection is administered slowly. The average dosage of the gentian violet solution is 5 cc for the arm and 10 cc for the leg. This amount may be increased depending on the extent and nature of the infection. The author states that injections may be given at the pulse in the radial artery and in the upper part of the brachial artery according to convenience. Thrombosis is the only contraindication to the treatment. Following the injection the limb acquires a bluish appearance which disappears in several hours but is not always evident, depending on the congestive state and the altered circulation. When the coloration is evident it shows that the liquid was really introduced in the artery.

### Semana Medica, Buenos Aires

42: 1349-1424 (Nov. 7) 1935 Partial Index

Technic of Local Anesthesia for Total Removal of Parotid Gland. R. Finocchio and G. H. Dickmann—p. 1349

Neuralgia of Nasal Branch of Trigeminal Nerve Due to Tuberculous Toxemia. Case C. Charlin—p. 1352

Functional Examination of Kidney. Technic for Determination of Function. M. E. Varela—p. 1360

Treatment of Recent Fractures of Lower Maxilla. T. Gioia—p. 1370

Surgical Treatment of Endarteritis Obliterans of the Limbs. Experiments. A. S. Introzzi and A. Garzon—p. 1382

Auto-Urotherapy and Urine Proteose (Oriels P. Substance) in Treatment of Anaphylactic Diseases. J. Favelukes—p. 1410

**Neuralgia of Nasal Branch of Trigeminal Nerve.**—Charlin reports two cases of neuralgia of the nasal branch of the trigeminal nerve caused by tuberculous toxemia in which recovery was obtained immediately and permanently by the Mantoux test made with a diagnostic aim. The test gave intense positive results in both cases—the hyperemia and infiltration lasting about one week. The general condition of the patients improved on disappearance of the pain and the ocular and nasal symptoms. Both patients were adults with latent forms of tuberculosis of the thoracic ganglions and the author says that since there are no symptoms of this form of the disease in adults the Mantoux test is advisable in cases of uncontrollable neuralgia of the trigeminal nerve resembling essential trigeminal neuralgia before one resorts to alcoholic injections or operation. He believes that the satisfactory results of the tuberculin injection are due to the formation of antibodies in the patient when reaction takes place.

**Anaphylactic Diseases.**—Favelukes advises auto urotherapy according to Oriels modified technic in the treatment of diseases caused by anaphylactic or allergic conditions. Oriels reported that he had extracted from the urine of such persons a proteose of specific antigenic properties (*Lancet* 2: 231

[Aug. 2] 1930 abstr. *THE JOURNAL*, Sept. 29, 1930, p. 897). The urinary proteose, which was named substance P by its discoverer, is a precipitate of the urine, soluble in distilled water. Its intradermal and subcutaneous injections in high dilutions are of diagnostic and therapeutic value. A positive reaction to the first injection which is manifested by the development of local and general symptoms, points out the anaphylactic nature of the disease, and the following injections cause specific desensitization of the patient. The first three injections are given intradermally in doses of 0.05, 0.1 and 0.15 cc of the solution (the concentration of which varies from 1 per cent to 1 per million according to the type of the disease and the sensitivity of the patient). The interval between the injections varies according to the intensity of the general reaction, reinjection being indicated by the abatement of the reaction. The following injections are given subcutaneously in doses of from 0.1 to 1 cc or more and increased in the amount of 0.1 cc. per injection. Neither the intravenous nor the intramuscular route can be used for giving the injections. Generally recovery is obtained after the first six injections. The treatment, however, can be prolonged to ten or twelve injections if necessary and may be repeated in cases of recurrence of the allergic or anaphylactic crises. In order to avoid the development of violent reactions which were frequently observed after the injections of the urinary proteose prepared according to Oriels technic, the latter was modified by Thiers (*Compt. rend. Soc. de biol.* 117: 940, 1934 *Semana medica* 42: 1412 [Nov. 7] 1935). The author states that the results of Oriels's modified technic are more precise than those of the original technic and reports satisfactory results in six cases of several diseases of an anaphylactic and allergic nature. The diseases treated included dyspnea due to inflammation of the nose and bronchi in some cases and of the alveoli of the bronchioles in other cases, asthma, and various forms of urticaria.

### Deutsche medizinische Wochenschrift, Leipzig

61: 1871-1910 (Nov. 22) 1935 Partial Index

Experiences with Schick Reaction After Active Diphtheria Immunization. M. Gundel and J. Wustenberg—p. 1871

Technic of Bronchography. G. Anton—p. 1875

Deformity of Internal Genitalia and Tubal Pregnancy. H. Markus—p. 1876

Mucoid Form of Bacterial Growth as Cause of Disease. Bacterium *Pyocyanum* Mucosum in Pyelonephrosis. P. Dahr and H. Kolb—p. 1879

Wilson's Hereditary Transmission (Sex Linked Heredity) in Human Subjects. H. Gunther—p. 1881

**Mucoid Form of Bacterium *Pyocyanum* in Pyelonephritis.**—Dahr and Kolb point out that the *pyocyanus* bacilli (also designated as genus *Pseudomonas*) are widely distributed, occurring in the intestine as well as on the skin of human subjects. They are found in wounds with mixed infections but also in pure culture. The authors discuss the variants and mutations of the *pyocyanus* bacillus, paying especial attention to a mucoid form which they consider rare. They show that the capsule formation and the consequent mucoid growth of a bacillus is a manifestation of mutation that is occasionally produced artificially by the addition of chemical substances to a culture. In this connection they call attention to the club formation on typhoid and paratyphoid B bacteria by rhamnose and raffinose. Bacteriophages are another important factor in the development of bacterial mutations. d'Herelle has obtained mucoid growth under the influence of bacteriophages, and he considered the capsule formation a protective measure of the micro organism. The authors think that the occurrence of mucoid variants of bacteria in the human organism may likewise be induced by bacteriophages or defense substances. Mucoid forms of paratyphoid B bacteria for instance have been repeatedly observed in carriers and in many of these cases the pertaining bacteriophage could be demonstrated. A mucoid form of the *pyocyanus* bacillus was first detected in a human subject by Sonnenschein in 1927. However, in 1896 Pottien reported a case in which a *Bacillus fluorescens capsulatus* was detected and which may have been a mucoid variant of the *pyocyanus* bacillus. These two reports seem to be the only ones outside the case observed by the authors. Their patient was a man aged 61 who had a pyelonephrosis in which the mucoid form of the *pyocyanus* bacillus was obtained in pure

culture. Following a report of the history of the patient, they describe bacteriologic studies which revealed that the *Bacterium pyocyaneum-mucosum* detected in this case differs from the one described by Sonnenschein only in its behavior on culture mediums that contain tellurium. To be sure, his tellurium culture medium differed somewhat from that used by the authors, which contained copper sulfate. The authors think that the micro-organism observed by Pottien was likewise a variant of the *pyocyaneus bacillus*.

### Jahrbuch für Kinderheilkunde, Berlin

145: 237-344 (Nov.) 1935

- Clinical Results of Calmette's Vaccination. B. Epstein.—p. 237  
 \*Fatty Degeneration by Excess of Cholesterol Ester in Case of Acute Yellow Atrophy of Liver Caused by Typhoid. H. Beumer.—p. 265  
 Nuclear Icterus (Orth Schmorl) With and Without Erythroblastosis. Cornelia de Lange.—p. 273  
 Dietetic Treatment of Psoriasis in Children. E. Schiff.—p. 299  
 Genesis of Physiologic Leukorrhea in the New Born. L. von Dobszay.—p. 306

**Fatty Degeneration of Liver by Excess of Cholesterol Ester**—Beumer points out that typhoid with the aspects of an acute yellow atrophy of the liver, although rare, has been known for decades. He describes a case with unusual metabolic aspects. A child, aged 8 years, developed symptoms of typhoid. Swelling of the liver developed on the eighth day, increased rapidly and was accompanied by icterus and coma. Between the eleventh day and the fatal outcome on the fourteenth day, the symptoms were those of acute yellow atrophy of the liver. In view of the high fever they had to be considered secondary to an infectious toxic process, but the definite diagnosis of typhoid was not reached until the last day, when typhoid bacilli were discovered, and it was concluded that the child had an atypical typhoid. The most noteworthy aspect of the necropsy was the enormously enlarged liver to three times the normal weight. Its uniform yellow color indicated fatty degeneration. Histologic examination disclosed in addition to lymphocytic and leukocytic cell accumulations extensive fat infiltration, and only the marginal zones showed dystrophic autolytic changes. Necrotic foci characteristic for typhoid were not found. The author points out that, as far as the etiology is concerned, acute yellow atrophy is not a disease entity. The conditions under which the liver succumbs to the various bacteriologic or metabolic toxins are still obscure. According to Ghon it is always an atrophy following a preceding fatty infiltration, and death may take place during the stage of fatty infiltration. The author found that the fat content of the kidneys was increased to twice the normal value but that the cholesterol content was normal. The total fat content of the liver did not exceed the values found in other cases of fatty liver, but the unusual aspect of this case lay in the extraordinarily large quantity of cholesterol. The severe fatty degeneration by an excess of cholesterol ester is the more surprising because it developed within a few days, in the course of which the patient took but little food. The endogenic sources of this increase in the cholesterol content remain obscure, but the author considers two possibilities: either an excessive cholesterol formation must have taken place (from the disintegrating liver cells or from other sources) or the cholesterol that was formed in normal quantities in the intermediary metabolism was prevented from being changed into bile acids and other products by the breakdown of the liver metabolism.

### Klinische Wochenschrift, Berlin

14: 1665-1704 (Nov. 23) 1935 Partial Index

- Heart Block of Type II. E. Edens.—p. 1669  
 Intermediate Wave ST. B. Kisch.—p. 1670  
 \*Daily Blood Sugar Curves in Healthy and Diabetic Persons. G. Schöne and H. Zimmer.—p. 1672  
 Seasonal Fluctuations in Occurrence of Acute Leukosis. J. Engelbreth Holm.—p. 1677  
 \*Erythrocyte Sedimentation Speed in Pernicious Anemia. H. Reichel.—p. 1679  
 Chemotherapy of Infectious Diseases. M. Oesterlin.—p. 1682  
 \*Diagnosis of Tuberculous Pulmonary Cavities. Their Differentiation from Circumscribed Interlobar Hydropneumothorax. H. Wachtel.—p. 1686

**Daily Blood Sugar Curves**—Schöne and Zimmer show that, although usually compensation of pancreatic insufficiency is readily accomplished during hospitalization, this aim is not

always attained when the diabetic patient returns to his home and work, for at home the diet is not always strictly adhered to and the muscular exertion of work as well as the excitement of daily life influence the sugar metabolism. In order to estimate the ideal course of the blood sugar curve in a favorable adjustment of diet and insulin, the authors studied the blood sugar curve of working, healthy persons during the day and night hours. They discovered considerable fluctuations. In the rather low level of the diurnal curve and in the temporary reduction of the blood sugar values below 50 or even 40 mg. per hundred cubic centimeters they see the combined influence of food stimulus and of physical and mental fatigue on the regulation of the carbohydrate metabolism. These studies also indicated a certain dependence of this regulation of the carbohydrate metabolism on the constitution of a person (whether of a pyknic or of a leptosome type). On the basis of observations on normal persons, fluctuations in the daily blood sugar curve of from 100 to, at the most, 150 mg. seem optimal in diabetic patients who receive insulin and follow their occupation. The authors demonstrate with case histories that only the blood sugar curves that are taken with the consideration of the home conditions and of the occupational work can be the basis of the determination of the practical insulin requirements. In the physical exertion involved in the occupational activity of the diabetic patient the authors see a factor that exerts a favorable influence on the carbohydrate metabolism and permits a reduction of the insulin dosage.

**Erythrocyte Sedimentation Speed in Pernicious Anemia**—Reichel shows that the sedimentation speed of the erythrocytes is greatly accelerated in patients with pernicious anemia. When remission begins, the sedimentation speed commences to decrease even before the number of erythrocytes and the hemoglobin content increase and generally reaches normal values when the hemoglobin content has reached 50 per cent. In the event of insufficient liver therapy with reticulocytic crisis but without subsequent remission of the anemia, the reduction in the sedimentation speed does not take place. The considerable reduction in the accelerated sedimentation is the simplest and surest sign of the onset of a remission.

**Diagnosis of Pulmonary Cavities**—Wachtel investigated whether all pulmonary cavities that are considered tuberculous on the basis of roentgenoscopy are actually so. Roentgenoscopy differentiates two types of tuberculous pulmonary cavities. The first type appears among tuberculous infiltrations as an area of lesser density with an irregular outline. Within the area of lesser density a horizontal line may appear, which indicates the borderline between the fluid and gaseous contents of the cavity. The second type of cavity is round, as if cut out with a punch. It is filled with gas or partly with fluid and is surrounded by thin sharply defined walls, around which there is only slight infiltration. Careful observations in the course of a number of years convinced the author that a circumscribed interlobar pleurisy, when its effusion becomes an interlobar hydropneumothorax by the admixture of gas, may simulate tuberculous cavities in the roentgenogram. The possibility that an interlobar hydropneumothorax may be of small dimension was first learned from the spontaneous cures of "silent early cavities." The author observed numerous cases in which roentgenologic changes that had been considered tuberculous cavities disappeared after a shorter or longer period, leaving an interlobar induration behind. It was found that especially the cavities of the second type represented in many cases a circumscribed interlobar hydropneumothorax. The analysis of these roentgenograms disclosed that the thin domelike upper outline of these cavity pictures corresponded to the upper part of the interlobar pleura. For the diagnosis of an interlobar hydropneumothorax the localization at the interlobar cleft is important, this can be recognized by roentgenoscopy on the rotated patient. Interlobar effusions without the admixture of air are quite common in the early course of pulmonary tuberculosis. In the roentgenogram they appear as intense shadows at the margin of the lobe. If small quantities of air from the alveoli enter these effusions, an interlobar hydropneumothorax develops as an accompanying symptom of early tuberculosis. It seems to be of only slight clinical importance, since it may persist



for several years without causing noticeable symptoms. Nevertheless it is important to differentiate it from a tuberculous cavity with its grave implications. The author concludes that, if the roentgenograms of the circumscribed interlobar hydropneumothorax are correctly interpreted, the number of "early cavities," "silent cavities" or "spontaneously cured cavities" becomes so small that their existence seems questionable.

### Medizinische Klinik, Berlin

31: 1521 1556 (Nov. 22) 1935 Partial Index

- Orthostatic Albuminuria During Childhood H. Knauer—p. 1521  
So-Called Nervous Disturbances of Heart and Suitability for Sports F. Gaisbock—p. 1524  
Correct Massage: A Physiologic Method of Examination and Treatment Indispensable for Physician A. Müller—p. 1532  
\*Early Diagnosis and Prognosis of Diseases of Myocardium A. Leimdörfer—p. 1536  
Spontaneous Cure of Carcinoma. O. Hajek—p. 1539

**Early Diagnosis of Myocardial Disorders**—Leimdörfer describes a method of examination by means of which he detects latent myocardial disorders. The patient stands erect for ten or fifteen minutes. The reaction of the heart to this exertion is then measured by means of the electrocardiograph, and the electrocardiogram thus obtained is compared with one taken while the patient is reclining. In order to arrive at a correct estimation, it proved necessary to make control tests with the electrocardiogram in various respiratory phases. In patients without heart disease, the electrocardiograms revealed only those changes that were caused by changes in the diaphragmatic position (partly as the result of the respiratory changes, partly as the result of standing) and by the changing tonus of the vagus and sympathicus. The author emphasizes that in the patients with a normal heart the after wave, during the respiratory arrest following a deep expiration, is always noticeably enlarged in the reclining as well as in the erect position. In patients with heart disease but without clinical signs of myocardial impairment in whom the electrocardiogram taken during the reclining position showed no deviation from the norm, the electrocardiogram taken during the erect position (quiet breathing) showed an iso-electric or a diphasic after wave in leads 1 and 2. This pathologic after wave was evident also in the electrocardiographic control made during the respiratory arrest following a deep expiration. In brief, during the erect position these cardiac patients showed signs exhibited by patients with manifest myocardial defects during the reclining position. On the basis of this observation it was concluded that these cardiac patients have a latent myocardial disorder. The author describes observations on patients with polyarthritis, exophthalmic goiter and influenza. He thinks that especial attention should be paid to the detection of myocardial impairments in patients with influenza. He concludes that the technic mentioned is valuable in determining the functional capacity of the cardiac muscle and that, together with other methods, it might be used to determine the adequacy of the cardiac function before operations or before gymnastic or other physical exertions.

### Zentralblatt für Gynäkologie, Leipzig

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- Unilateral Absence of Ovary A. Bock—p. 2770  
Unilateral Ovarian Aplasia with Homolateral Rudimentary Tube J. Osterfeld—p. 2771  
\*Development of Isolated Peripheral Radial Paralysis in the New Born H. Kraft—p. 2773  
Eugenic Sterilization in Women K. Kayser—p. 2776  
Prediction of Sex According to Schöner and Varble's Law of Statistical Compensation O. Schöner—p. 2778  
Malaria and Puerperium K. Provos—p. 2781  
Connection Between Function of Mammary Gland and Hormones of Secretory Glands W. Sawitzki—p. 2784

**Isolated Peripheral Radial Paralysis in the New-Born.**—Kraft evaluates the various factors accepted as having etiologic significance in isolated peripheral radial paralysis and describes a case in which pressure of the uterine wall seems to have been the cause. He points out that uterine pressure may be exerted during gestation or during the process of delivery. He thinks that in the reported case it was the pressure of the uterine contractions which caused the radial paralysis for there existed also a subcutaneous adiponecrosis. In this connection

he stresses that Schoedel has advanced evidence to the effect that in the course of a prolonged delivery the repeated pressure from the uterine contractions is sufficient to produce extensive adiponecrosis. In the reported case the delivery was extremely prolonged and the radial paralysis of the right arm was accompanied by adiponecrosis of the external surfaces of both upper arms. On the right side the infiltration extended over the radial point into the region of the deltoid muscle, while on the left arm the adiponecrosis was only in the region of the deltoid muscle. Radial paralysis developed only on the right side, where the pressure reached the radial point. Thus the case demonstrates the significance of the pressure from uterine contractions as a possible cause of congenital radial paralysis. This pressure is especially effective in case of premature rupture of the bag of waters, secondary weakness of labor pains, narrow pelvis and large fetus. The author recommends faradization to ensure better nutrition of the nerve and to prevent muscular atrophy. He began this on the eleventh day. He also advises daily massage and movements of the arm. The infiltrations disappeared in the fourth week, at which time the arm could be moved in the normal manner.

**Function of Mammary Gland and Hormones**—Sawitzki shows that the administration of estrogenic substance to puerperal women in most cases prevents lactation and the swelling of the breasts. If estrogenic substance is given together with the factor in pregnancy urine, this effect is even more noticeable. The author points out that the administration of these substances seems advisable when cessation of lactation is aimed at (death of the child). He thinks that this mode of treatment may eventually replace the measures formerly employed to produce cessation of lactation. His observations were made on twenty-nine women. Fifteen were given only estrogenic substance and fourteen were treated with both substances. Of the fifteen women, nine responded well, of the fourteen, ten responded favorably. At first the author gave the injections subcutaneously but, because this procedure proved painful, intragluteal injection was resorted to. He injected two or three times daily, in all from 200 to 800 mouse units of estrogenic substance and also from 50 to 100 rat units of the factor in pregnancy urine every day. The milk secretion ceased after four or five days. The author concedes that his observations will have to be verified on a larger material.

### Klinicheskaya Meditsina, Moscow

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- Tuberculosis and Pathergy M. M. Soskind—p. 1443  
Cardiac Syndromes in Tuberculosis T. D. Kan—p. 1454  
\*Carbohydrate and Chloride Metabolism in Pneumonia S. N. Sinelnikov, P. M. Perchik and O. N. Doroklova—p. 1474  
Basal Metabolism in Pulmonary Tuberculosis N. A. Shmelev and M. M. Davydova—p. 1482  
\*Effect of Oxygen Inhalations on Gaseous Exchange of Blood and Tissue Respiration in Pneumonia N. A. Kurshakov and N. K. Kukhtin—p. 1490  
\*Cod Liver Oil Treatment of Infected Wounds V. K. Tamansky and I. A. Yatskevich—p. 1528

**Carbohydrate and Chloride Metabolism in Pneumonia**—Sinelnikov and his associates conclude on the basis of their studies of the blood sugar and the urinary chlorides in twenty-three cases of pneumonia, that the latter is a condition of a pathologic nondiabetic acidosis. Physicochemical alterations in the tissue colloids take place because of the upset in the acid-base balance in favor of acidosis giving rise to alterations in the carbohydrate and chloride metabolism. The authors found that the blood sugar in all their cases was raised above the normal (from 120 to 160 mg.) during the stage of hyperpyrexia and that these figures persisted until the crisis. There was a simultaneous sharp fall in the excretion of chlorides in the urine (from 0.58 to 1.3 mg. of sodium chloride in twenty-four hours) which persisted until the critical fall of the temperature. The amount of urine excreted during the stage of pyrexia averaged from 500 to 800 cc. in twenty-four hours. Following the crisis the blood sugar returns to normal, the urinary excretion rises and with it the amount of excreted sodium chloride increases to reach the normal on about the eighteenth or twentieth day. The increase in the excreted sodium chloride is more marked than that of diuresis. Application of insulin therapy resulted

in lowering the mortality in their series to almost zero. The chloride metabolism was rapidly restored to normal with the simultaneous lowering of the hyperglycemia.

**Oxygen Inhalations in Pneumonia** — Kurshakov and Kukhtin found a high grade anoxemia in the twenty-four cases of pneumonia studied by them. The effect of oxygen inhalations was to increase the oxygen content of the arterial blood and the oxygen combining power up to normal even in the severe types of pneumonia. Oxygen inhalations increase the percentage of oxygen utilization by the tissues. The favorable effect on anoxemia was observed as late as one hour after eight to ten minute inhalations. This in the authors' opinion, depends on improved tissue respiration. They conclude that oxygen inhalations are indicated in every case of pneumonia.

**Cod Liver Oil Treatment of Infected Wounds** — Tumansky and Yatsevich found that the growth of streptococci in sterilized and nonsterilized cod liver oil ceases after one hour. The growth of staphylococci under the same conditions lasts six hours. Experiments showed that glycerin possesses the same bactericidal qualities as cod liver oil. The effect of adding sterile petrolatum to cod liver oil was to lower the bactericidal power of the latter, permitting the streptococci and staphylococci to grow seventy-two hours. The growth of streptococci and staphylococci in sterile petrolatum continued for fifteen days. The authors confirmed the bactericidal qualities of cod liver oil in their experiments on guinea-pigs. The application of cod liver oil dressings in fifty-three patients with infected wounds demonstrated the effectiveness of this method. This was particularly effective in the treatment of granulating wounds of the soft tissues.

### Vrachebnoe Delo, Kharkov

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Pathogenesis of Trachoma E. F. Levkova — p. 675  
Malaria and the Eye A. E. Goldfeder and V. D. Moldovskaya Krievskaya — p. 683

\*Effect of Artificial Pneumothorax on Course of Epilepsy I. W. Slivko and P. B. Torkanovskiy — p. 696  
Prognosis of Chronic Tonsillitis in Children F. D. Gurevich — p. 700

**Effect of Artificial Pneumothorax in Epilepsy** — According to Slivko and Torkanovskiy, the effect on epilepsy of small injections of gas, not to exceed 200 cc, in the pleural cavity was either to increase the number of seizures or not to influence the course in any way. Further introduction into both pleural cavities of large quantities of gas up to 1,000 cc had the effect of diminishing or entirely terminating the seizures for as long as six weeks in cases in which they occurred daily and several times daily. The seizures returned with absorption of the gas. In two patients, in whom the pneumothorax was maintained for six months, the course of the disease was much improved, as manifested by the cessation of seizures and improvement in the general health. The authors practiced multiple refills but never observed the occurrence of a seizure in the course of an insufflation. They did not observe a single case of pleurisy, which they attribute to the fact that they were dealing with a non-infected pleura. Epileptic seizures occurring after induction of a pneumothorax were as a rule shorter and less severe. They feel that the coexistence of pulmonary tuberculosis is no contraindication to the induction of a pneumothorax.

### Acta Medica Scandinavica, Stockholm

86: 455-592 (Nov. 21) 1935

Investigations on Influence of Experimental Diminution of Mobility of Thorax on Oxygen Debt After Graduated Work. H. C. Jacobæus G. Nylin and B. Almberg — p. 455

Is Creatinine Clearance an Expression of Filtration Through Glomeruli? Studies on Sugar and Urea Excretion P. Iversen and T. Bjerring — p. 459

Chrysotherapy of Chronic Polyarthritides A. Mester — p. 469  
Effect of Different Forms of Diet on External Secretion of Pancreas L. Abramson — p. 478

Chloramine Allergy E. B. Salén — p. 486  
Occurrence of So-Called Latent Allergy E. B. Salén and C. Juhlin Dannfelt — p. 505

\*Thermostable Noncomplex (Auto) Hemolysin in Transitory Cold Hemoglobinuria E. B. Salén — p. 570

**So-Called Latent Allergy** — Salén and Juhlin-Dannfelt made tests on 432 persons belonging to different occupational groups (bakers, cavalry soldiers, veterinarians, actors, ware-

house employees and garment workers) in order to determine the incidence of sensitization against certain occupational allergens, and how often this sensitization leads to manifest allergy. The results seem to confirm the specificity of the positive skin reactions and of the allergen extracts. All allergen extracts were controlled in tests on nonallergic persons. By making cross tests with the different extracts in the various groups, additional control material was obtained. The results of these tests are recorded in tables, which indicate, for instance, that a rye extract gave positive skin reactions in 38 per cent of the persons connected with the baking industry, whereas in the other groups only 4 or 5 per cent gave positive reactions with this extract. The majority of the latter had clinical signs of allergy and all gave positive reactions to the allergens of their occupations. The authors reach the conclusion that there is a rather large group of patients with latent allergy. They point out that, on the basis of their observations, a revision is necessary in the hitherto generally accepted interpretation of certain cutaneous problems in allergy. They think that the theory of a pathologically increased permeability of the skin and mucous membranes as a necessary (or chief) requirement for the resorption of allergens, that is, for their function as sensitizers and elicitors, can no longer be accepted. On the contrary, it must be assumed that such a resorption as a rule takes place through intact mucous membranes and probably also through the normal skin. It is likely that in the course of this resorption sensitization takes place in a comparatively physiologic manner. The existence of a relatively large number of persons with latent allergy necessitates a modification of the generally accepted theory that sensitization always implies the clinical manifestation of allergy. They think that the question should no longer be why some persons become sensitized while others do not, but rather why some sensitized persons have a clinically manifest allergy and others not. They think that this new formulation of the problem will create room for a number of clinical aspects in connection with allergy, which could not be explained on the basis of the former theory. They are convinced that the immunity condition (in its broadest meaning) plays a significant part in the problem of allergy.

**Transitory Hemoglobinuria** — Salén's patient has been under his observation for more than a year and presents the symptoms of acrocyanosis and transitory hemoglobinuria, which appear only after exposure to cold. The hemoglobinuria could be elicited by local cooling. The case presents some clinical deviations from the typical cold hemoglobinuria, for the transitory manifestations of hemoglobinuria are not accompanied by shock, increase in temperature or other general symptoms. It proved impossible to demonstrate a hemoclastic crisis in the course of the provocation experiments. The serologic analysis of this case never disclosed a complex hemolysin of the Donath-Landsteiner type. However the blood fluid (serum and plasma) contained an agglutinating and hemolyzing factor. The blood temperature had to be reduced to 30° C before agglutination or hemolysis would take place. A further reduction in the temperature increased the agglutination and hemolysis. The serum was in both respects active against the patient's own erythrocytes as well as against the erythrocytes of another person (independent of the group differences). Neither of the two factors was destroyed by heating the serum for forty-five minutes to 59° C. The hemolyzing factor was thermostable. Moreover, it was of a noncomplex nature, that is, it functioned without the aid of a lytic component. The author thinks that this agglutinin is probably identical with the panhemo-agglutinin described by Mino and others. The fact that experiments with 'purified' agglutinins, according to Landsteiner, yielded a solution with agglutinating but without hemolyzing action and that the patient's urine contained a hemolyzing but not an agglutinating substance makes it probable that the two functions are exerted by different substances. A review of the literature convinced the author that the occurrence of a strongly active panhemo agglutinin is extremely rare and that in none of the reported cases did there exist in addition to the agglutinating function also a hemolyzing one. He thinks that the reported case represents a form of transitory cold hemoglobinuria not described before.

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## MULTIPLE SPECIFIC NUTRITIONAL DEFICIENCY DISEASE IN THE ADULT

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The fact that disease may result from the lack of something has been appreciated only recently. Up to fifty years ago all disease was ascribed to tumors, microbes, poisons or other pathogenic agents. Then cretinism and myxedema were recognized as manifestations of a deficiency in thyroid secretion, and in 1891 thyroid extract was used as replacement therapy. Now many symptoms and syndromes are known to result from defects in secretion of the endocrine glands. More recently symptoms due to a deficiency in specific factors in nutrition have been recognized, so that the group of negative diseases has been greatly enlarged. An insufficient intake of all food results in malnutrition, but with the exception of edema due to a low blood protein content a deficiency in protein, fat and carbohydrate causes no specific signs or symptoms. The mineral salts are vital for all animal life. Each salt probably has a specific function, although a deficient supply only of calcium, iron and iodine is associated with a characteristic clinical picture. A deficiency in calcium may cause tetany, and a deficiency in iodine, a goiter. A deficiency in iron is much more frequently followed by clinical symptoms than is a lack of other inorganic substances since the reserve store in the body is small and anemia quickly develops if the supply is not sufficient.

With the discovery of the vitamins and the demonstration that they are essential to normal nutrition, signs and syndromes due to a deficient supply of these specific elements have been recognized. The mineral salts and vitamins must be taken into the gastro-intestinal tract since the human body is unable to manufacture vitamins as well as mineral salts. Certain necessary and specific factors in nutrition represent an alteration of food elements in the gastro-intestinal tract. The pernicious anemia preventive factor is thus formed by the interaction of something supplied by the stomach, the intrinsic factor, on something supplied by the food, the extrinsic factor. The lack of the nutritional factors so formed may also lead to deficiency disease. One must consider then as specific nutritional deficiency disease the abnormalities arising from a lack of the specific elements in nutrition which are normally supplied by the food or are formed directly from the food in the gastro-intestinal tract. The field of deficiency disease is developing rapidly. In the present state of our knowledge the more important specific substances the

lack of which leads to nutritional defects in the adult are (1) calcium, (2) iron, (3) vitamins A, B, B<sub>2</sub> (G) and C, and (4) the anti-pernicious anemia factor. These factors are summarized in table 1, together with the specific function that is altered in the adult if a deficiency occurs.

Since the specific nutritional elements are necessary either to maintain the integrity or to support growth and function of certain tissues, the lack of these elements should be manifested by definite symptoms or structural defects. Certain clinical syndromes have been set apart as deficiency diseases, as pellagra, beriberi and scurvy. Such conditions, however, usually represent extreme deficiencies which occur in a minor form with much greater frequency. Symptoms and signs referable to a deficiency of the different nutritional elements often overlap, and a deficiency in one factor may initiate or influence a deficiency in other factors. Many different organs and tissues may be affected by a lack of the specific factors. It is more correct to consider clinical deficiency symptoms as deficiency "disease" rather than deficiency "diseases." The systems that may be involved together with the more important lesions observed in each are summarized in table 2. A deficiency in each specific nutritional element results in characteristic signs and symptoms, and, if the deficiency is continued long enough and is sufficiently intense, a clinical syndrome which is designated a disease may result. Characteristic manifestations due to a lack of the specific food factors are shown in table 3.

With such widespread anatomic involvement and such a multiplicity of clinical signs and symptoms characteristic of specific deficiency, it is necessary to consider the lack of necessary nutritional factors in many clinical problems. Even if a nutritional deficiency is not the ultimate cause of a disease, it may be complicating it or carrying it on. Mackie<sup>1</sup> has well emphasized the frequency and importance of deficiency states in chronic ulcerative colitis. Pellagra has frequently been reported secondary to lesions of the gastro-intestinal tract. Certain diseases such as the neuritis of pregnancy or alcoholism formerly thought due to some positive toxic agent, are now proved due to the lack of specific nutritional elements. While full-blown deficiency states such as scurvy and beriberi are seldom seen in this country, minor deficiency states are common. I have been much impressed with the frequency of deficiency states and especially with the frequent manifestations of multiple nutritional deficiency disease. It is often possible to determine definitely that more than one factor is lacking. In other cases the multiple manifestations observed may be related to a single deficiency. Thus Miller and Rhoads,<sup>2</sup>

1 Mackie, T. T. Ulcerative Colitis. II The Factor of Deficiency States. J. A. M. A. 104: 175-178 (Jan. 19) 1935.  
2 Miller, D. K., and Rhoads, C. P. The Experimental Production of the Loss of Hematopoietic Elements of the Gastric Secretion and of the Liver in Swine with Achlorhydria and Anemia. J. Clin. Investigation 14: 153-172 (March) 1935.

using a diet which produces black tongue in dogs and which was considered by Goldberger to be deficient only in the pellagra-preventing factor, have produced in swine (1) an anemia usually macrocytic but sometimes microcytic, (2) ulcerative lesions of the oral mucous membranes, (3) gastric achlorhydria with the absence of the normal hematopoietic activity of the gastric secretion (4) diarrhea and (5) motor weakness. With this diet which contains all mineral salts and known vitamins they have thus produced symptoms suggestive of sprue pellagra and pernicious anemia. The symptoms are prevented or cured by liver extract, so these authors conclude that they are due to the lack of some unknown constituent contained in liver extract. These experiments well emphasize the complexity of the nutritional problem.

The following typical case reports illustrate the multiplicity of the symptoms of deficiency disease.

**CASE 1—Multiple neuritis with marked hypochromic anemia.** *History*—A woman, aged 48, had always tired easily and been undernourished. For eighteen years she had had severe pain in various muscles and joints which was more marked in the arms and legs and interfered with sleep. The pain had been interpreted as due to arthritis but there had never been any swelling, redness or other definite evidence of joint disease. The tonsils had been removed and treatment given by numerous physicians without relief. For five years the patient had had epigastric distress, distention and occasional vomiting, nervousness and weakness. She complained that her skin had become atrophic and wrinkled. Her periods were always normal up to the menopause three years before. There had been no abnormal loss of blood. Two years previously she had had a generalized edema without apparent cause and during the past winter again had edema of the legs without evidence of myocardial weakness. She had had two attacks of diarrhea lasting several weeks each. The tongue was not sore, the appetite was poor and the patient had never been told that she was anemic.

*Examination*—The patient was very pale and undernourished. The skin over the hands was smooth and glistening, there was no pigmentation, the nails were normal. There was no atrophy or redness of the tongue. There was a systolic murmur over the entire precordium. The blood pressure was 96 systolic and 56 diastolic. The liver edge was palpable and

The anemia presented by this patient was a typical iron deficiency type, which in the absence of abnormal blood loss suggested a defect in intake or utilization of iron. The skeletal changes were suggestive of a neuritis due to a vitamin B deficiency. The patient had taken an incomplete and poorly balanced diet for years. She had not eaten much meat since childhood and ate very few vegetables. The intake of fruit seemed sufficient.

TABLE 2—*Systems Involved and Lesions Observed in Deficiency Disease in Adults*

| System                              | Lesions Observed as Manifestation of Deficiency   |
|-------------------------------------|---|
| I Skin and other epithelial tissues | (1) Atrophy, (2) scaling, (3) dermatitis, (4) pigmentation, (5) ulceration, (6) cornification   |
| II Nervous system                   | A Neuritis (1) pain, (2) paresthesia, (3) weakness, (4) paralysis<br>B Degeneration of spinal cord (1) lateral column, (2) posterior column<br>C Cerebral (1) mental disturbances<br>D Disturbance of function (1) tetany |
| III Alimentary tract                | (1) Anorexia, (2) stomatitis, (3) glossitis, (4) atrophy of tongue, (5) achlorhydria, (6) loss of specific ferment, (7) diarrhea, (8) loss of tone of gastrointestinal tract, (9) ulceration of intestine                 |
| IV Hematopoietic system             | (1) Macrocytic anemia, (2) hypochromic anemia, (3) microcytic anemia  |
| V Vascular system                   | (1) Hemorrhage, (2) easy bruising, (3) edema  |

The neuritis, the edema, the skin changes, the hypochromic anemia, the redundant colon, the achlorhydria and other gastro-intestinal disturbances were all well explained on a deficiency basis. Deficient intake, dietary imbalance and poor absorption and utilization were all factors here in the development of clinical disease.

**CASE 2—Anemia and paralysis due to polynuritis in pregnancy.** *History*—A woman, aged 22, had been married five years and at the time of examination was pregnant for the fifth time. The first two pregnancies terminated normally and the second two ended in stillbirths late in pregnancy. The patient on admission was in the sixth month of the fifth pregnancy. She had never menstruated since marriage and remarked that she had been pregnant almost every day from the time she was married. Seven months before admission just after the last stillbirth she first noticed weakness and numbness of the hands. Similar symptoms soon appeared in the feet. No pain was present. The weakness was progressive until she was completely disabled. The tongue was not sore and there were no skin changes.

*Examination*—There was complete paralysis of the arms and legs with absent deep reflexes but without sensory disturbances. There was moderate atrophy of the muscles of the arms and legs. The tongue was smooth and red. No edema was present. Except for marked dental caries, the examination was negative.

The blood Wassermann reaction was negative. The spinal fluid showed nothing significant. The test meal revealed an achlorhydria with a total acidity of 31 per cent. The blood examination showed red blood cells, 3,950,000; hemoglobin, 68 per cent (10.5 Gm); volume index, 0.97; color index, 0.84; leukocytes, 11,250, with a normal differential count. The icterus index was 6 and platelets were normal.

This patient lived in a mill town under poor conditions and had had a very limited diet for economic reasons. The rapid pregnancies were a marked drain on her food store. She had also had marked vomiting with each pregnancy, so the conditions were ideal for the development of deficiency disease. In the past, when a neuritis such as this occurred in pregnancy it was interpreted as due to some toxic factor incident to the pregnant state. This patient was put on a balanced diet with added vitamin B in the form of yeast, liver extract intravenously and iron. She went through the pregnancy without mishap and had a healthy baby. There

TABLE 1—*Nutritional Factors with a Specific Function in Adult*

| Factor                        | Specific Function   |
|-------------------------------|---|
| Calcium                       | Necessary for the normal function of nerve tissue               |
| Iron                          | Necessary for the formation of hemoglobin and erythrocytes      |
| Vitamin A                     | Necessary for the integrity of epithelial tissues               |
| Vitamin B                     | Necessary for the integrity of nerve tissues                    |
| Vitamin B (G)                 | Necessary for the integrity of dermal tissues                   |
| Vitamin C                     | Necessary for the integrity of the endothelium of blood vessels |
| Anti pernicious anemia factor | Necessary for the maturation of erythrocytes in bone marrow     |

the spleen was three fingerbreadths below the costal margin. The patient complained of pain on deep pressure all over the body. Movement of the joints gave pain in the muscles. There was no objective evidence of joint disease and no edema.

The urine examination and the Wassermann test were negative. Examination of the stool showed no blood parasites or other abnormality. The test meal revealed an achlorhydria with a total acidity of 37. A gastro-intestinal x-ray study showed a normal gallbladder, stomach and duodenum. The colon was very atonic and redundant. The blood showed red blood cells, 3,410,000; hemoglobin, 31 per cent (4.8 Gm); volume index, 0.65; color index, 0.46; leukocytes, 8,100 with a normal differential count. The icterus index was 2 and platelets were abundant.

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was gradual improvement in the paralysis. She wrote six months later that she could work normally.

**CASE 3—Macrocytic anemia with peripheral neuritis sprue and tetany.** History—A man aged 26 was diagnosed as having pernicious anemia two years previously and had taken a potent liver extract daily by mouth for sixteen months. At the time of admission he had a constant diarrhea, excessive gas formation and weakness. For one year he had had marked numbness of the hands and feet, but the tongue was not sore. **Examination**—Nothing significant was found on the general physical examination. The tongue was smooth. The reflexes were normal, the vibratory sense was intact and the position sense was good. The stool examination showed no blood or parasites. The test meal revealed an achlorhydria with a total acidity of 16 per cent. The Wassermann test and examination of the urine gave negative results. The blood examination showed red blood cells, 2,940,000; hemoglobin, 78 per cent (12 Gm); volume index, 144; color index, 1.32; and leukocyte count, 11,400 with normal differential count. The icterus index was 3 and the platelets were normal. **Course in Hospital**—With adequate intramuscular liver therapy the diarrhea ceased and there was marked general improvement and a gain of 25 pounds (11.3 Kg). While he was in the hospital a typical carpopedal spasm of tetany developed, which was relieved by intravenous calcium therapy. The following day the serum calcium was 98 mg per hundred cubic centimeters. Later it was 8.64 mg. Six months later all symptoms returned while the patient was eating liver daily but again response to intramuscular liver extract was obtained. The patient's condition has continued to be satisfactory although it has been difficult to prevent a macrocytosis of the erythrocytes and diarrhea.

This patient had a macrocytic anemia due to the deficiency in the anti-pernicious anemia factor, a deficiency neuritis, symptoms suggesting sprue, especially in view of the leukocytosis which had been constant and tetany due to a lack of calcium. All symptoms and signs responded to intramuscular liver therapy.

**CASE 4—Pernicious anemia and sprue with low blood proteins.** History—A woman aged 50 had been exhausted for several years. For the past three years she had been having attacks of diarrhea which at first responded to dietary management. She had never seen blood or mucus in the stools. One year before admission following an attack of influenza, the diarrhea had become much worse and had persisted to the present time. For the past six months she had been confined to bed because of the diarrhea, occasional attacks of vomiting and palpitation. She had lost 40 pounds (18 Kg) in two years. The appetite had been poor. Nine months before she had marked swelling of the ankles without apparent cause. The patient thought her diet had been normal except for the recent omission of fruits and vegetables after the onset of the diarrhea. She had six children who were living and well. Her past history was unimportant. **Examination**—The skin was dry and atrophic but without pigmentation. The tongue was clean and atrophic with red edges. There was a constant tachycardia but no evidence of organic heart disease. There was some edema of the feet. The examination otherwise was negative. The basal metabolic rate was minus 19 per cent. The serum calcium was 8.82 mg per hundred cubic centimeters. Serum protein was 3.58 per cent with 1.65 per cent albumin and 1.93 per cent globulin. The stools were light greenish without blood or parasites. The proctoscopic examination was negative and the roentgen study of the gastro intestinal tract showed only hypermotility. The blood count showed red blood cells, 3,700,000; hemoglobin, 78 per cent (12 Gm); volume index, 118; color index, 1.05; leukocytes, 14,900 with a normal differential count. The icterus index was 5 and the platelets were normal.

This patient had a macrocytic anemia due to a deficiency of the anti-pernicious anemia factor and the low calcium of sprue. With intramuscular liver therapy

the appetite returned, the edema began to disappear and before the patient left the hospital the bowel movements decreased to two or three a day with normally formed stools.

**CASE 5—Pellagra and pernicious anemia.** History—An unmarried woman, aged 60, had been losing weight for three months and had become increasingly weak and mentally dull. For one week she had been confined to bed. She had noticed pallor and dryness of the skin and she had been constipated for years. Her past history was otherwise unimportant. **Examination**—The patient's mental reactions were so sluggish that she responded to questions with difficulty and was constantly confused. She was obese. The blood pressure was 140 systolic and 80 diastolic. Examination of the heart, lungs, abdomen and pelvis was negative. The face and legs were edematous but did not pit on pressure. The dorsum of the hands showed marked wrinkling and a scaly dermatitis. The skin was everywhere dry and the pubic and axillary hair was scanty. Over the elbows the skin was darkly pigmented. The deep tendon reflexes were sluggish but there were no other neurologic changes of significance. There was no glossitis or stomatitis. **Examination of the urine and the Wassermann test** were negative. The basal metabolic rate was minus 35 per cent. The test meal showed no free acid and a total acidity of 10.

TABLE 3—Clinical Conditions Associated with Specific Nutritional Deficiency

| Nutritional Factor            | Clinical Signs of Deficiency  | Clinical Syndrome (Disease)   |
|-------------------------------|---|---|
| Calcium                       | Increased nerve irritability  | Tetany  |
| Iron                          | Anemia of hypochromic and often microcytic type                             | Hypochromic anemia  |
| Vitamin A                     | Epithelial defects  | Ophthalmia, urinary calculi, night blindness                            |
| Vitamin B                     | Anorexia, neuritis, edema   | Beriberi, multiple neuritis   |
| Vitamin B <sub>2</sub> (G)    | Glossitis, dermatitis, neuritis, mental disturbances                        | Pellagra (?)  |
| Vitamin C                     | Hemorrhage due to vascular defects  | Scurvy  |
| Anti-pernicious anemia factor | Glossitis, diarrhea, anemia of macrocytic type, degeneration of spinal cord | Pernicious anemia, subacute combined degeneration of spinal cord, sprue |

per cent. The blood proteins were normal (6.33 per cent). The urea clearance test showed an average of 45 per cent with a blood urea of 33 mg per hundred cubic centimeters. The x-ray study of the gastro intestinal tract was negative except for absence of filling of the gallbladder. The blood examination showed red blood cells, 2,990,000; hemoglobin, 65 per cent (10 Gm); volume index, 1.21; color index, 1.08; leukocytes, 10,100 with a normal differential count. The icterus index was 5 and the platelets were normal.

The patient's temperature ranged from normal to 102 F but gradually returned to normal. With high vitamin feeding and liver extract intramuscularly, the edema disappeared, the mental processes became more alert and the appearance was much brighter. One week after admission the basal metabolic rate had risen to minus 1 per cent. The patient had the macrocytic anemia typical of pernicious anemia as well as the skin and mental changes seen in well developed pellagra. The picture is much like that produced by Miller and Rhoads<sup>2</sup> in swine with a black tongue diet. It is possible that all this patient's difficulties followed the absence of some one factor supplied therapeutically by liver extract.

**CASE 6—Pellagra, mild scurvy and hypochromic anemia.** History—A woman, aged 43, admitted to the Cleveland Clinic in July 1933 complained of nosebleed, dizziness, neuralgia, nausea and vomiting. She stated that for nine months she had



had a severe pain over the left eye associated with marked dizziness, nosebleed and nausea. She had had marked constipation. She had always bruised easily. A complete examination at that time showed nothing significant except a slight rotary nystagmus, a positive Romberg test and a chronic hypertrophic arthritis. The Wassermann test gave negative results, the urea clearance was normal, examination of the urine was negative and the blood sugar and urea were normal.

She did not improve and was seen again nearly two years later with the history that all her symptoms had become much worse following an attack of influenza six months before. The pain in the left frontal area was severe. The speech was slow and drawing and the gait was ataxic. The nystagmus and positive Romberg tests were still present. The deep tendon reflexes were weak. She had had no edema or paresthesia but did complain of a sore tongue. The nausea and vomiting had ceased after the first admission, although the nosebleed had persisted. The tongue was atrophic and fiery red. There were excoriations at the angle of the mouth, but no pigmentation or dermatitis. Her mental reactions were very slow. The eye-grounds showed nothing of significance and the neurologic examination was negative except for the points mentioned. The spinal fluid was normal. The basal metabolic rate was minus 22 per cent. The test meal showed a free acid content of only 9 and a total of 22 per cent. The blood examination showed red blood cells, 3,860,000, hemoglobin 65 per cent (10 Gm), volume index, 0.97, and color index 0.84. The leukocyte count was 5,000, and the differential count was normal. The icterus index was 2, and the platelets were normal.

The striking manifestations in this case were the mental retardation and other signs of neurologic involvement—the glossitis, the anemia and the tendency to bleed. The appetite was poor and for years the diet had consisted largely of starches and sweets, with almost no meat or vegetables and very little fruit. Her breakfast had consisted entirely of toast and coffee. She showed rapid and marked improvement on a complete high vitamin diet and liver extract intramuscularly. The ataxia and nystagmus were among the first signs to disappear.

**CASE 7—Iron deficiency anemia with subacute combined sclerosis of the cord.** *History*—A woman aged 50, first noticed numbness of the hands and feet and difficulty in walking after the birth of her first child, who was 25 years old at the time of this examination. These symptoms cleared up entirely but the numbness recurred nine years later and had persisted. For the past year she had had marked difficulty in walking because of loss of muscle sense. At times she had incontinence of urine. Fifteen years before, the spinal fluid was examined and was found to be normal. No history of sore tongue or diarrhea was elicited.

*Examination*—The general physical examination was entirely negative except for the neurologic changes. The tongue was normal. The general neurologic examination showed hyperactive knee jerks with a bilateral positive Babinski reaction, ataxic gait, positive Romberg and impaired vibratory sense typical of a combined sclerosis of the spinal cord.

The spinal fluid examination, the urine and the Wassermann tests gave negative results. The test meal showed no free acid and a total acidity of only 7 per cent. The blood count showed red blood cells, 4,910,000, hemoglobin, 68 per cent (10.5 Gm), volume index, 0.86, color index, 0.69, and leukocyte count, 3,900, with a normal differential count. The icterus index was 4 and the platelets were normal.

This patient's neurologic lesion is typical of that seen in pernicious anemia due to a lack of the anti-pernicious anemia factor. The anemia, however, was an outspoken iron deficiency anemia. The entire picture was typical of deficiency disease. The patient's anemia responded to large doses of iron. Intensive liver therapy was given without much result so far as the neurologic picture was concerned.

**CASE 8—Pernicious anemia and iron deficiency anemia together.** *History*—A man, aged 68 came to the Cleveland Clinic primarily for a difficulty in vision which was found to be

due to advanced vascular changes in the retina. He stated that he had been anemic for seven years and had taken liver iron and liver substitutes with good results. He had had glossitis several years before but not recently. The only other symptom of anemia was weakness. There had been no paresthesia or difficulty in walking. One sister of the patient had pernicious anemia and his father had died of an anemia.

*Examination*—The patient had well marked arteriosclerosis and auricular fibrillation. The blood pressure was 140 systolic and 95 diastolic. The vibratory sense was entirely lost over the lower extremities. The neurologic examination was otherwise negative. The tongue was reddened and very atrophic. The finger nails showed the typical spooning of idiopathic hypochromic anemia. The urine and Wassermann tests were negative. The test meal showed no free acid and a total acidity of 8 per cent. The blood showed red blood cells, 3,890,000, hemoglobin, 65 per cent (10 Gm), volume index, 0.98, color index, 0.83 and leukocyte count, 4,800, with a normal differential count. The icterus index was 4 and the platelets were normal.

The family history, the loss of vibratory sense, the glossitis and atrophic tongue, and the history of response to liver therapy strongly suggested pernicious anemia. The spoon nails were typical of idiopathic hypochromic (iron deficiency) anemia. The blood showed an anemia which suggested a combination of the macrocytosis of pernicious anemia and the microcytosis of hypochromic anemia with the resulting picture of an anemia with cells of normal size. The history, clinical manifestations and blood changes could well be explained on the basis of a mixed deficiency anemia.

#### COMMENT

A deficiency in specific nutritional factors is an important phase of clinical medicine. The possibility of such a deficiency should be considered in many general clinical surveys just as infection, glandular disorders, allergy and other etiologic factors are considered. The full blown deficiency "diseases" such as scurvy, beriberi or pernicious anemia are usually recognized, but the minor symptoms of deficiencies that are common are regularly missed unless kept in mind and searched for.

Certain symptoms and signs should always suggest the possibility of a specific nutritional defect. A macrocytosis of the red cells suggests a deficiency of the anti-pernicious anemia factor just as a hypochromia suggests an iron deficiency. Hyperirritability of the neuromuscular mechanisms always suggests a lack of calcium. A glossitis or atrophic tongue as well as peripheral nerve disturbances should always bring to mind a vitamin B deficiency. Dermatitis and pigmentation with nerve disturbances together with stomatitis and glossitis suggests a B<sub>2</sub> deficiency. Easy bruising and unexplained edema should make one think of a deficiency in vitamin C.

The specific elements that have been discussed are all proved factors in nutrition, the presence of which is shown only by symptoms which arise when these elements are absent. The field of nutrition is constantly enlarging and there is little doubt that further study will reveal other specific factors the absence of which will explain other conditions now a mystery to us.

Deficiency disease is due to a lack of the specific nutritional factor at the point in the body where it is needed and normally utilized. The actual incorporation of the nutritional factor in a normal way necessitates an adequate supply, adequately absorbed and adequately utilized, so that every problem in deficiency disease concerns supply, absorption and utilization. For example, to prevent the development of pernicious anemia the bone marrow must constantly have a supply of the anti-pernicious anemia factor which is normally formed in

the stomach by the interaction of the intrinsic factor on the extrinsic factor. Even after it is formed in adequate amounts it must be absorbed and then utilized chemically in the marrow. Since all the specific food elements must be taken in as food or formed directly from the food, the condition of the gastro-intestinal tract is of vital importance. A diarrhea will necessarily cause a decrease in absorption, or vomiting will decrease the supply. Achlorhydria likewise seems an important factor in preventing proper absorption. It has been proved also that dietary imbalance will interfere with absorption and utilization. McCarrison showed that an animal on a maintenance diet of vitamin B will develop signs of a B deficiency if excessive amounts of carbohydrate are added to the maintenance diet. A poorly balanced diet with insufficient protective foods is often taken. Even if sufficiently supplied and absorbed, the utilization may be interfered with by disease or other factors. Chronic nephritis is a frequent cause of faulty utilization. Deficiency disease is more common in women. The symptoms of a nutritional defect often date from a pregnancy when the need for specific food factors is greater and the intake often less, as the result of vomiting.

TABLE 4—*Factors Influencing the Supply, Absorption and Utilization of Specific Nutritional Elements*

1. Amount ingested or lost directly by vomiting
2. Needs of the body especially as influenced by pregnancy or other factors increasing the need such as hyperthyroidism
3. Impairment of absorption into blood stream by
  - (a) achlorhydria
  - (b) hypometabolism
  - (c) infection
  - (d) imbalance of food especially an excessive intake of carbohydrates
4. Impairment of utilization in tissues by
  - (a) disease as chronic nephritis
  - (b) hypometabolism
  - (c) infection
  - (d) imbalance of food

The important factors influencing the development of deficiency disease from the standpoint of supply, absorption and utilization are summarized in table 4.

The possible effects of a nutritional deficiency are widespread since almost every tissue of the body may be involved. When one thinks of the essential nature of specific nutritional factors, the frequently deficient intake, the dietary imbalance or the occurrence of disease preventing utilization, it is surprising that deficiency disease is not more common. It is common in the mild forms, although the outspoken clinical entities due to deficiency are unusual. When a deficiency does exist, there is often a lack of more than one factor, so that the deficiency is frequently multiple.

#### CONCLUSIONS

Symptoms resulting from a deficiency in specific nutritional factors occur frequently, although clinical entities designated deficiency diseases such as beriberi and scurvy are uncommon.

The deficiency may be due to a deficient intake of the specific food factors for normal needs, an insufficient supply for abnormal needs as in pregnancy, a defect in absorption or a disturbance in utilization.

To fulfil its purpose, a nutritional factor not only must reach its point of use in sufficient amount but must actually be used there.

Almost every tissue of the body may be affected by a deficiency in a food factor.

The nutritional defect is frequently multiple although often one defect is more prominent.

One should think of nutritional deficiency disease or state rather than of deficiency "diseases" and should consider this deficiency state in many clinical problems.

#### ABSTRACT OF DISCUSSION

DR. R. F. FARQUHARSON, Toronto, Ont. Chronic disease states as well as certain physiologic states may impair not only the appetite and the intake of food but also the utilization of food. Even when only one element is lacking, as far as one can tell, such as the anti-pernicious anemia factor, there may be disturbance in many parts of the body. The anemia is obvious to every one. The subacute, combined degeneration of the cord is equally well known, as is the glossitis and the disturbance of the heart with its typical pathologic picture. It is probable that these patients suffer also from a general lack of a sense of well being and from a weakness of the muscles due almost entirely to the lack of the anti-pernicious anemia factor. It is quite possible that similar less distinct symptoms arising from the deficiencies may occur in many parts of the body for almost every substance that may be deficient. There is a great difference in individuals in their ability to withstand such deficiencies and a difference in the dose of whatever the deficient substance may be that is necessary to effect relief or cure. Under these circumstances the obvious importance of careful study, careful history taking and careful treatment with observation of the patients is extremely great.

DR. MICHAEL G. WOHL, Philadelphia. It is important to bear in mind that the pure laboratory deficiency disease is not comparable to that seen in human beings. One may be able to eliminate a specific substance from a basal diet in animals and produce a condition such as beriberi or xerophthalmia. In human beings, however, dietary deficiency is more complicated and avitaminosis is frequently of the multiple type, this applies particularly to avitaminosis B, because in the majority of instances there is anorexia, and with the lack of intake of food there is other absence of vitamin. In addition to the lack of vitamins from which these patients suffer they suffer from lack of other food elements, especially the proteins, and if one considers that most of these patients in addition to the hypovitaminosis are also undernourished, one questions how much of the recorded pathologic anatomy and physiology is due to the lack of vitamins, and how much to general undernutrition. I have already reported that a patient with diabetes mellitus developed as the result of prolonged dietary restrictions characterized by poor vitamin B intake, the cardiac and neurotoxic signs of beriberi and the eye changes of xerophthalmia. The postmortem confirmed the diagnosis. The functions of some of the endocrine glands depend in a large measure on an adequate diet, as, for example absence of vitamin E, causing degeneration of the germinal cells in the male and sterility in the female. Evans and Simpson have shown a subnormal sex hormone content of the pituitary in animals on an inadequate vitamin B diet. Witness the close similarity in the chemical structure between vitamin A and estrogenic substance. Vitamin B is closely knit with the thyroid. Experimental B<sub>1</sub> avitaminosis behaves very much like hypothyroidism both conditions are marked by low basal metabolism, low specific dynamic action of food, subnormal temperature and diminished intestinal peristalsis. Both show anemia and hypochlorhydria. If one bears this in mind one will be more careful in attributing all the symptoms to avitaminosis but some of the symptoms will be explained on the basis of endocrine involvement. This point was impressed on me recently by a patient at the Temple University Hospital who had lost 45 pounds (20 Kg.) in two years because of improper food intake due to some gastro-intestinal disturbance. She developed amenorrhea, brittle fingernails, asthenia, hyperesthesia, loss of hair, and a basal metabolism of minus 34 per cent. When the patient was placed on a high caloric and high vitamin B diet she showed marked improvement in what appeared to be clinically a polyglandular syndrome.

DR. RUSSELL L. HADEN, Cleveland. I thought I made the subject complex enough and now I fear that Dr. Wohl has made it still more so. It is quite possible that some of the effects of dietary deficiency may be secondary to changes in the glands of internal secretion initiated by the dietary defect.

## THE NATURE OF THE ANTIPERNICIOUS ANEMIA PRINCIPLE IN STOMACH

### I. METHOD TO IMPROVE STOMACH PREPARATIONS

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Castle and his co-workers<sup>1</sup> have published an extensive series of important experiments, which proved that pernicious anemia is the result of the inability of the stomach to secrete a definite antipernicious anemia factor. These investigations also showed that this hematopoietic factor is present in the gastric juice and gastric mucosa of normal individuals.

These experiments were utilized by Castle in the elaboration of a theory that sought to explain the nature of the gastric deficiency in pernicious anemia. In the present communication the evidence on which this conception is founded is subjected to further analysis. Certain original experiments are described, which suggest a different interpretation of the experimental results that form the basis of this theory. This leads to a different conception of the nature of the deficiency causing pernicious anemia and of the nature of the anti-anemic substance that is deficient.

### CASTLE'S THEORY AND ITS EXPERIMENTAL BASIS

Castle's theory is based on the striking beneficial results obtained by feeding to pernicious anemia patients incubated mixtures of gastric juice (or pig gastric mucosa) and beef, the effects were comparable to those obtained by liver therapy.

Positive results were obtained with mixtures of gastric juice and beef whether the material was incubated at acid or neutral reactions. In eight pernicious anemia patients of an early series the material consisted of 300 cc of gastric juice from normal subjects mixed with 200 Gm of ground beef, incubated for two hours at 37 C at a  $p_H$  of 2.5 to 3.5 and neutralized to  $p_H$  5 prior to administration.<sup>1c</sup> In later experiments the reaction of the material was  $p_H$  7 throughout.<sup>1d</sup>

Castle then showed that the feeding of gastric juice alone or beef alone was ineffective in pernicious anemia. Other experiments showed that incubated mixtures of pig gastric mucosa and beef also gave positive results,

thus it became apparent that the active agent in gastric juice was originally derived from the gastric mucosa.

It was by interpretation of these experiments that Castle elaborated his theory of the duality of the factors involved. "The active constituent (intrinsic factor) of the normal human fasting gastric contents is in all probability secreted by the mucosa of the stomach. This substance is probably organic, thermolabile, possibly an enzyme, capable of interaction with protein (extrinsic factor) or closely related substances in neutral solution, resulting in the production of material having, when administered to pernicious anemia patients, a marked hematopoietic effect."<sup>1d</sup>

He believed that such a "specific reaction" between "intrinsic" and "extrinsic" factors occurs in the gastrointestinal tracts of all normal individuals and that the basic defect leading to the development of pernicious anemia is the inability of the gastric mucosa to secrete the "intrinsic" factor and the failure of the normal "specific reaction" to occur. Castle termed this a "conditioned deficiency" and "a virtual deficiency in the presence of a diet adequate for the normal man." This conception did not agree with one that I previously held.

### THE AUTHORS WORKING THEORY

My interest in this subject began in 1924, before the advent of Minot and Murphy's important work. Based on the constant presence of achylia gastrica in pernicious anemia, the following working theory was set down at that time.

An erythrocyte-stimulating hormone resides in the gastric mucosa. In pernicious anemia, in which atrophy of the gastric mucosa takes place, a loss of this hormone occurs coinciding with the disappearance of acid from the gastric juice. Thus, in addition to the well known external secretion (digestive) the glands of the gastric mucosa produce an internal secretion (hematopoietic); this suggests an analogy to the pancreatic gland. It is possible that this hematopoietic hormone may control the level of erythrocyte production in normal individuals.

This conception of the role of the stomach is seen to differ from Castle's theory in that it conceived of pernicious anemia as due to deficiency of a single substance for the normal action of which no "extrinsic" or food factor was necessary.

In order to test this theory, certain animal experiments were performed at that time which showed that extracts of the stomach mucosa of the hog when injected into normal rabbits and guinea-pigs, would produce (1) a temporary erythrocytosis with an absolute increase of from 1 to 4 million erythrocytes within two hours after injection, (2) a moderate reticulocytosis and (3) bone marrow hyperplasia after repeated injections. These experiments, carried out in the department of pharmacology of McGill University during 1924 and 1925 and until now unpublished, will be described in detail in another place. For the present suffice it to say that in 1926, as a result of these animal experiments, and whether or not justified by them, a dried hog gastric mucosa was prepared for trial in the treatment of pernicious anemia in the hope that a specific antipernicious anemia effect would be demonstrated. Unfortunately, clinical cases of pernicious anemia were not available for trial at that time.

Several years later, however, after Castle had shown that the stomach plays an important role in the etiology

1. This work is covered in the following publications:

- (a) Castle, W. B. and Lock, E. A. Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia. *J. Clin. Investigation* 6: 2 (Aug.) 1928.
- (b) Castle, W. B. Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia. I. The Effect of the Administration in Patients with Pernicious Anemia of the Contents of the Normal Human Stomach Recovered After the Ingestion of Beef Muscle. *Am. J. M. Sc.* 178: 748 (Dec.) 1929.
- (c) Castle, W. B. and Townsend, W. C. Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia. II. The Effect of the Administration of Patients with Pernicious Anemia of Beef Muscle After Incubation with Normal Gastric Juice. *Am. J. M. Sc.* 178: 764 (Dec.) 1929.
- (d) Castle, W. B., Townsend, W. C. and Heath, C. W. Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia. III. The Nature of the Reactions Between Normal Gastric Juice and Beef Muscle Leading to Clinical Improvement and Increased Blood Formation Similar to the Effect of Liver Feeding. *Am. J. M. Sc.* 180: 305 (Sept.) 1930.
- (e) Castle, W. B., Townsend, W. C. and Heath, C. W. Further Observations on Etiological Relationship of Achylia Gastrica to Pernicious Anemia. *J. Clin. Investigation* 9: 2 (Aug.) 1930. *Lancet* 1: 1062 (May 17) 1930.
- (f) Castle, W. B., Heath, C. W. and Strauss, M. B. Observations on the Etiological Relationship of Achylia Gastrica to Pernicious Anemia. IV. A Biological Assay of the Gastric Secretions of Patients with Pernicious Anemia Having Free Hydrochloric Acid and That of Patients Without Anemia or With Hypochromic Anemia Having No Free Hydrochloric Acid and of the Role of Intestinal Impermeability to Hematopoietic Substances in Pernicious Anemia. *Am. J. M. Sc.* 182: 741 (Dec.) 1931.
- (g) Strauss, M. B. and Castle, W. B. The Nature of the Extrinsic Factor of the Deficiency State in Pernicious Anemia and in Related Macrocytic Anemias. Activation of Yeast Derivatives with Normal Gastric Juice. *New England J. Med.* 207: 55 (July) 1933.

2. Presented in part before the American Association of Clinical Pathologists in June 1934.

of pernicious anemia, it was shown by Sharp<sup>3</sup> and by Sturgis and Isaacs<sup>4</sup> that dried whole stomach is as specifically effective as liver in the treatment of pernicious anemia. My original prediction was thus fulfilled, but my concept of the nature of the gastric deficiency causing pernicious anemia was quite different from that laid down in Castle's theory. For this reason, and also because the latter theory seemed complicated and seemed to present no analogy to any known biologic mechanism and to resemble no known deficiency state, it was natural that the experimental basis of Castle's theory should be carefully reviewed.

#### ANALYSIS OF EXPERIMENTS ON WHICH CASTLE'S THEORY IS FOUNDED

In this way attention was directed to two sets of key experiments, each of which was reported as having given conflicting results. Since Castle's theory is founded on the positive results obtained from feeding gastric mucosa-beef mixtures, and the negative results from gastric mucosa alone, it seems important to explain Castle's contradictory observations in both types of experiment.

An important difference in technic gives a clue for the opposite results obtained with the same material. For example, in those gastric mucosa-beef experiments in which positive results were obtained, it may be seen that the mucosa had been stripped from fresh pig's stomach and placed in the icebox.<sup>5</sup> This freshly preserved mucosa was removed from the icebox when required and incubated with beef prior to administration, and it yielded good results in treatment.

The same type of experiment is found, however, to have given negative results at an earlier time.<sup>1a</sup> The technic is briefly described in the original communication, but in a later paper the authors explain that the mucosa "had been autolyzed with hydrochloric acid in the incubator" prior to mixing and incubating with beef.<sup>6</sup>

Regarding the experiments with gastric mucosa alone the authors state in the same place "We had also fed certain pernicious anemia patients 200 or more grams daily of this autolyzed pig gastric mucosa. These experiments were either entirely negative or showed a doubtful effect on blood formation. In our experiments with pig gastric mucosa the tissue was always incubated at 37.5 C. for at least forty-eight hours in the presence of hydrochloric acid."

In later experiments in which they had decided to use "as nearly fresh pig mucosa as possible" definitely positive results were obtained from "as little as 30 grams of fresh mucosa alone." These authors were "forced to conclude that the effects seen may have been entirely due to the independent action of the gastric mucosa." Since Castle's theory is founded on the belief that the addition of beef or some "other source of extrinsic factor" is necessary for the production of the antipernicious anemia principle, these positive results with gastric mucosa alone require explanation.

In their attempt to explain these results on the basis of Castle's theory, the authors assume that "other constituents" in the mucosa had served as the 'extrinsic' factor in the manner of the beef of other experiments and that these "other constituents" had been acted on by the "intrinsic" factor in the mucosa.

Even if such an interpretation of the positive results with mucosa feeding were acceptable, it would not explain the negative results at another time. It does not appear probable that opposite results would have been obtained unless a difference in technic had existed. It seems obvious that, in the earlier experiments in which mucosa gave negative results, autolysis had brought about the destruction of the antipernicious anemia factor in the mucosa.<sup>8</sup> Similarly, the ineffectiveness of the earlier gastric mucosa-beef mixtures was due to the use of mucosa that had been previously autolyzed. In order to determine which factor in the autolytic process is responsible for the destruction of the antipernicious anemia substance, the following experiments were performed.

#### EXPERIMENTS

To 40 Gm of ventriculin<sup>9</sup> was added 200 cc of water, 0.1 Gm of pepsin and sufficient dilute hydrochloric acid to turn red congo paper blue. This reaction was maintained approximately while the mixture was incubated over night at 38 C. This quantity was prepared daily and the mixture was fed daily in tomato juice to a relapsing pernicious anemia patient with an erythrocyte count of 1.8 million. There was no reticulocyte response after ten days of treatment. To control the experiment, treatment with ordinary ventriculin was now instituted and a daily dose of 40 Gm was fed in tomato juice. After six days the reticulocytes numbered 29.3 per cent.

In a second experiment in which the pepsinized ventriculin was incubated for only two hours instead of over night, a negative result was again obtained after eight days of treatment.

In these experiments the addition of pepsin and hydrochloric acid destroyed the antipernicious anemia properties of ventriculin. It was not possible, however, to decide whether this inactivation was due to the hydrochloric acid or to pepsin. To determine this point, it would be necessary to use not ventriculin which contains native pepsin, but a stomach preparation that would be free of pepsin. Such a depepsinized preparation was therefore made. Fenger and Andrew<sup>10</sup> described a method for the extraction of commercial pepsin in which peptic hydrolysis of the gastric mucosa is avoided. By so doing they were able to obtain a purer pepsin. Since my object was to remove pepsin without destroying the gastric mucosa and its content of antipernicious anemia principle, this method of extraction seemed ideal, and it was adapted as a first stage in the preparation of a depepsinized desiccated gastric mucosa.

The method used was as follows. To each kilogram of fresh frozen gastric mucosa 400 cc of 2 per cent hydrochloric acid was added and the mixture allowed to stand over night at 0 C. Then 1250 cc of acetone was added and the material strained and filtered. The pepsin in the filtrate was precipitated by the addition of 625 cc of acetone at a  $pH$  of from 3.4 to 3.6. After

3. Sharp, E. A. An Antianemic Factor in Desiccated Stomach. *J. A. M. A.* 93: 49 (Sept. 7) 1929.

4. Sturgis, C. C., and Isaacs, Raphael. Desiccated Stomach in the Treatment of Pernicious Anemia. *J. A. M. A.* 93: 747 (Sept. 7) 1929.

5. Castle, Townsend and Heath<sup>14</sup> p. 319.

6. Castle, Townsend and Heath<sup>14</sup> pp. 318-319.

7. Castle, Townsend and Heath<sup>14</sup> p. 320.

8. Wilkinson, J. F. and Klein, Louis. The Active Principle in Hog's Stomach Mucosa Effective in Pernicious Anemia. *Lancet* 1: 719 (April 2) 1932. These authors state that the antipernicious anemia factor in stomach mucosa is destroyed by "autolysis," especially in the presence of free hydrochloric acid or prolonged digestion with pepsin and hydrochloric acid.

9. Ventriculin is a commercial preparation of desiccated defatted hog stomach the activity of which is ensured by testing on pernicious anemia patients prior to marketing. An increase of blood reticulocytes as shown by Minot is the accepted sign of activity of a potent antipernicious anemia preparation (Minot, J. R., Murphy, W. P. and Stetson, R. P. The Response of the Reticulocytes to Liver Therapy. Particularly in Pernicious Anemia. *Am. J. M. Sc.* 175: 581 [May] 1928).

10. Fenger, Frederic and Andrew, R. H. On the Electrolytic Precipitation of Pepsin. *J. Biol. Chem.* 78: 371 (June) 1927.

this precipitate containing pepsin was removed, the filtrate was mixed with the original material and desiccated at 45 C

This preparation of depepsinized gastric mucosa was now tested to determine whether it possessed antipernicious anemia activity. Single daily doses of 40 Gm were given orally to a pernicious anemia patient with an erythrocyte count of 1.3 million. A very good reticulocyte response of 41.2 per cent was obtained on the sixth day, and continued treatment produced a satisfactory remission.

It was now possible to determine the separate effect of pepsin and of hydrochloric acid on the activity of this preparation. A mixture of 40 Gm of the depepsinized gastric mucosa, 0.1 Gm of pepsin, 200 cc of water and sufficient hydrochloric acid to turn red congo paper blue was incubated for four hours. This amount of material was given orally each day to a relapsing pernicious anemia patient with an erythrocyte count of 1.8 million. After nine days of treatment this material failed to produce a reticulocyte response.

Since pernicious anemia patients in relapse, suitable for testing of experimental material, were scarce, the same patient who had responded negatively to the foregoing material was utilized for the next experiment. The patient was now fed daily with a mixture consisting of 40 Gm of depepsinized gastric mucosa, 200 cc of water and sufficient dilute hydrochloric acid to turn red congo paper blue, which had been incubated for four hours. No pepsin was found on testing the original material by Mett's method and none was added. The patient now responded on the sixth day with 22 per cent reticulocytes.

The results of these experiments indicated that (1) the pepsin content of normal hog gastric mucosa could be removed without destroying the antipernicious anemia principle, (2) that peptic activity destroys the antipernicious anemia principle and (3) that hydrochloric acid alone does not.

This demonstration of the antagonism of pepsin toward the antipernicious anemia substance in gastric mucosa suggested an explanation for the fact observed by Castle that the feeding of normal human gastric juice alone is ineffective in pernicious anemia. Was the antipernicious anemia substance in such normal gastric juice destroyed by the native pepsin also present? To establish this point, the collection of normal gastric juice was carried out under conditions that should inactivate the pepsin present.

Two normal subjects, after having been given 60 grains (4 Gm) of calcium carbonate orally as a neutralizing agent, were injected with histamine in order to stimulate the flow of gastric juice. By means of a Rehfuess tube the gastric juice was then aspirated and collected in a glass beaker containing ice and surrounded by ice. Care was taken immediately to adjust the reaction of the juice to neutrality and to maintain it so, until it was given to a pernicious anemia patient who had been selected for the testing of this material. The patient was fed about 250 cc of this cold, neutralized gastric juice each day. It was given in the morning, on an empty stomach, and no food was allowed for the following four hours, in order to avoid the introduction of the so-called extrinsic factor. The result obtained was quite different from that observed by Castle from the administration of normal gastric juice alone. This patient, whose initial red blood cell level was 2.6 million, responded with 14 per cent reticulocytes on the seventh day.

This experiment showed that the oral administration of normal gastric juice is effective in pernicious anemia if peptic activity is prevented, also that the mere physical presence of pepsin is not destructive to the antipernicious anemia factor, if the pepsin is inactive. Since the gastric juice was effective without the addition of beef or other substance that might serve as the "extrinsic" factor, the existence of the latter would seem to be questionable.

#### REINTERPRETATION OF CASTLE'S BASIC EXPERIMENT

In the light of the pepsin-sensitive nature of the antipernicious anemia substance in stomach, the experimental results that form the basis of Castle's theory may now be reexamined in a new way. When positive results followed the feeding to pernicious anemia patients of incubated mixtures of gastric juice and beef, the active agent, according to Castle's theory, was a third substance resulting from a "specific reaction" between the gastric juice and beef (equation 1).

It must be recalled, however, that the gastric juice in this equation contained, besides the antipernicious anemia substance, an abundance of native pepsin. The enzyme pepsin is known to have a strong affinity for protein, such as that in beef and fibrin. When such protein is in contact with pepsin in a fluid menstruum the pepsin is adsorbed to the protein. If the menstruum is of proper acidity, the protein will be digested, otherwise it is simply bound to the unaltered protein. "If a piece of protein such as fibrin be immersed in a solution of pepsin and then taken out and washed of all adherent pepsin, it will be found, on placing it in a hydrochloric acid solution of proper strength, that peptic digestion proceeds. Advantage may be taken of this fact to separate pepsin from a solution."<sup>11</sup>

Applying these facts to the equation representing Castle's experiment, it becomes possible to explain the effectiveness of the mixtures of gastric juice and beef by a logical mechanism. By the natural law cited, the native pepsin in the gastric juice must have been adsorbed by the ground beef with which it was incubated. When the pepsin had in this way been "separated" or removed from the mixture, it could not exert its antagonistic action on the antipernicious anemia principle, the "intrinsic factor." The amount of beef used was capable of binding a considerable amount of pepsin. Thus, it is seen that the beef served to protect the antipernicious anemia principle and not as a substrate for the action of an enzyme-like "intrinsic factor." This interpretation of Castle's experimental results has the advantage of simplicity and may be expressed in equation 2.

Thus, while according to Castle the active antipernicious anemia agent originally present in the gastric juice becomes transformed to a different substance after incubation with beef, by the newer interpretation the original agent is unaltered in nature and remains the original factor (A) of the equation.

By this interpretation no biologic interaction, such as conceived by Castle, is deemed to have taken place when gastric juice and beef were incubated together. Such mixtures have later been found to be effective without any preliminary incubation,<sup>12</sup> which would be the case if their effectiveness depended simply on the adsorption of the pepsin by the beef.

<sup>11</sup> Macleod J. J. R. *Physiology and Biochemistry in Modern Medicine*, ed. 5, St. Louis: C. V. Mosby Company, 1926, p. 718.  
<sup>12</sup> Castle W. B. *The Etiology of Pernicious and Related Macrocytic Anemias*. *Science* 82: 159 (Aug. 23) 1935.



Klein and Wilkinson<sup>13</sup> believed that they obtained a substance different from the original active agent in their stomach extract, when the latter was incubated with beef. They found that the active agent in this mixture survived a temperature of from 60 to 70 C. for half an hour and was soluble in 70 per cent alcohol, while the active principle in their stomach extract was destroyed by such heating and was not soluble in 70 per cent alcohol. It is known, however, that an active agent in an impure mixture frequently shows a different vulnerability to heat.

Certainly these observations cannot be regarded as having established the identity of the active principle in their mixture with the active principle of liver, as suggested by these investigators. The antipernicious anemia factor in autolyzed yeast is also resistant to from 60 to 70 C. for half an hour and is also soluble in 70 per cent alcohol yet is recognized as being different from the liver principle. Castle agrees in this criticism and states that "to establish thermal identity with the active principle in liver, it is at least necessary to show that boiling is without effect."<sup>12</sup>

#### THE "EXTRINSIC FACTOR"

It should be clear that the foregoing is intended not to contest the validity of Castle's important contribution of the positive role of gastric deficiency in the etiology of pernicious anemia but rather to clarify the nature of this deficiency. With regard to the latter, Castle's conception has undergone considerable change with the passage of time. At first the "extrinsic factor" was regarded as protein in nature and pernicious anemia was believed due to "inadequate protein digestion." Later, when Castle and Strauss<sup>14</sup> obtained positive results with mixtures of gastric juice and autolyzed yeast as they had with gastric juice and beef, the "extrinsic factor" came to be identified with vitamin B<sub>12</sub>,<sup>15</sup> it was then hypothecated that pernicious anemia was the result of the nonoccurrence of a normal "specific reaction" between "intrinsic" and "extrinsic" factors.

Autolyzed yeast was believed to serve as the "extrinsic factor," in the manner of the beef of earlier experiments. Inconsistent with this idea is the fact that, while beef per se had been found ineffective in

EQUATION 1—Castle's Basic Theory

|  |      |   |   |   |
|--|------|---|---|---|
| Normal Gastric Juice<br>antipernicious anemia factor (A)<br>by Castle termed "intrinsic<br>factor" and regarded as a<br>new enzyme | Plus | Beef Muscle<br>by Castle termed<br>"extrinsic factor" | → | antipernicious anemia factor (O)<br>a different substance from the original A<br>thought by Castle to be the product of the<br>action of A on B |
|--|------|---|---|---|

EQUATION 2—Author's Theory

|  |      |                                       |   |   |
|--|------|---------------------------------------|---|---|
| Normal Gastric Juice<br>antipernicious anemia factor (A)<br>also free pepsin | Plus | Beef Muscle<br>containing protein (B) | → | antipernicious anemia factor (A)<br>also bound pepsin |
|--|------|---------------------------------------|---|---|

#### REINTERPRETATION OF THE EXPERIMENT OF STURGIS AND ISAACS

After Castle had shown that the stomach plays an important role in the etiology of pernicious anemia, Sharp,<sup>3</sup> Sturgis<sup>14</sup> and Isaacs demonstrated that desiccated whole hog stomach is as effective as liver in the practical treatment of pernicious anemia. The last-named investigators then conducted experiments to determine the effectiveness of individual layers of the stomach wall, compared to whole stomach.

They found stomach mucosa active but inferior in potency to whole stomach, the muscularis was completely inert. The authors then attempted to explain the difference in activity between whole stomach and mucosa by Castle's theory, assuming that "a secretion of the mucosa, possibly of the nature of an unnamed enzyme, had acted on the muscle, when the two were ground together, thus liberating the active hematopoietic agent."

A different interpretation of these results is now possible. It seems probable that when the mucosa and muscularis were ground together, prior to desiccation, the native pepsin present in the mucosa was adsorbed by the protein of the muscularis so affording protection to the pepsin-sensitive antipernicious anemia substance also present in the mucosa.

pernicious anemia autolyzed yeast has been shown to be moderately effective in pernicious anemia<sup>16</sup> and as strikingly effective as liver in "pernicious anemia of the tropics."<sup>17</sup>

The hematopoietic action of autolyzed yeast (the preparation used was *vegey*) cannot apparently therefore be due to the presence of the so-called extrinsic factor, as believed by Castle, nor is this hematopoietic factor apparently the same as the stomach principle or the liver factor, though it does resemble the latter in that it is thermostable and soluble in 70 per cent alcohol. A possible clue to the nature of the antianemic agent in autolyzed yeast is furnished by the fact that it is definitely more effective in "pernicious anemia of the tropics" than in Addisonian pernicious anemia. The former is a much less severe condition and shows less damage of the gastric mucosa than Addisonian pernicious anemia. It would appear, then, that autolyzed yeast is more effective when there is less damage to the secreting gastric mucosa. Is it possible that autolyzed yeast contains elements that are capable of stimulating the cells that elaborate the gastric antianemic agent or that these elements furnish material for the synthesis of the latter?

13 Klein Louis and Wilkinson J F. Investigations on the Nature of Haemopoietin, the Antianemic Substance in Hog's Stomach. II. The Production of a Thermostable Haemopoietically Active Substance Similar to or Identical with the Antianemic Principle of Liver by the Action of the Thermostable Haemopoietin on Beef. *Biochem J* 25:1684 1934.  
14 Sturgis C C. Recent Development in the Treatment of Pernicious Anemia and a Consideration of the Etiology of the Disease. *Addison Goldsmith Lecture*. New York Pathological Society. October 1930.  
15 Will Lucy. Treatment of "Pernicious Anemia of Pregnancy and Tropical Anemia" with Special Reference to Yeast Extract as a Curative Agent. *Brit M J* 1:1059 (June 20) 1931.  
16 This has been disproved. Will Lucy. The Nature of the Haemopoietic Factor in Marmite. *Lancet* 2:1283 (June 17) 1933. Wills I and Nash Alice. A Case of Pernicious Anemia Treated with Vitamin B<sub>12</sub> from Egg White. *ibid* 1:1286 (June 17) 1933. Jensen H C A., and Lassen H K. *Am J M Sc* 188:461 (Oct.) 1934.  
17 Goodall Alexander. The Treatment of Pernicious Anemia by Marmite. *Lancet* 2:781 (Oct. 8) 1932. Davidson L S P. Autolyzed Yeast Products in the Treatment of Anaemia. *Brit M J* 2:481 (Sept. 9) 1933.

## THE ANTIANEMIC PRINCIPLE IN STOMACH

Castle's theory supposes the active principle in stomach ("intrinsic factor") to be a hitherto unknown enzyme elaborated by the gastric mucosa and secreted into the gastric juice. The enzyme theory is based on (1) the conception of the necessity of a substrate, the "extrinsic factor," and (2) the fact that the active principle is thermolabile.

Morris and his associates,<sup>18</sup> on the other hand, have defined the antianemic principle in stomach as a hormone, because they have found it "dialyzable, exhaustible and to withstand chemical treatment known to destroy enzymes." They have looked on this substance as an internal secretion produced by the gastric mucosa and secreted externally as well.

There seems to be insufficient evidence at present to base any definite conclusions as to the nature of the gastric antianemic substance. There is an objection to each of these conceptions, the doubtfulness of the existence of the substrate or "extrinsic factor" is against the enzyme idea, while by its thermolability the active principle differs from most hormones.

Castle has stated that the active principle in gastric juice is destroyed by heating to from 60 to 70 C for one-half hour or to 40 C for forty-eight hours. In view of the fact that gastric juice is an acid solution of pepsin, which attains maximum activity at 40 C, it seems likely that when normal gastric juice was heated to 40 C the antianemic principle was destroyed by peptic activity and not by this relatively low temperature.

However most hormones can withstand boiling. The active principle in liver exhibits such a degree of thermal resistance. In this and other ways it differs from the active principle in stomach. The relationship between the antipernicious anemia principles in these two organs is at present not clear though there is hardly any doubt that a very definite relationship exists. Present knowledge suggests that the stomach mucosa is the seat of production and that the liver stores active principle but does not form it. Is it possible that the thermolabile principle in liver is a hormone and that the stomach factor is its precursor or alternatively, that the thermolabile factor in stomach is of the nature of a kinase through the action of which the active liver principle is formed? Certain experiments that have a bearing on this question will be described in another place.

It may be said that the antipernicious anemia factor in stomach mucosa presents a certain resemblance to insulin, since each is elaborated by a glandular structure, which also produces a digestive enzyme (pepsin and trypsin respectively), capable of exerting an antagonistic action.

## METHOD TO IMPROVE STOMACH PREPARATIONS FOR THE TREATMENT OF PERNICIOUS ANEMIA

Sharp<sup>3</sup> and Sturgis and Isaacs<sup>4</sup> introduced the feeding of desiccated whole hog stomach, and Morris and his associates<sup>18</sup> injected concentrates of gastric juice and of the fluid pressed from animal stomach contents, in the treatment of pernicious anemia.

Since these materials contain an abundance of native pepsin, it seems probable that the latter could become activated under certain conditions, leading to the weakening or destruction of the antipernicious anemia fac-

tor. The conditions required for optimum peptic activity are an acid fluid medium and a temperature of about 37 C.

Morris employed large volumes of gastric juice or pressed animal stomach contents, which he concentrated to a small volume by vacuum distillation at 37 C and injected intramuscularly at a single dose. At times a very potent material was thus obtained, as, for example, when a single injection representing originally 8 gallons of swine juice produced a prolonged reticulocytosis and a steady rise of the erythrocyte count of from 14 to 48 million in six weeks. Such a complete remission would be possible only after repeated injection of liver extract.

This result, however, was exceptional. Numerous instances of weak or inert preparations resulted from the use of the same material and the same method as had already yielded an active product. It seemed possible that Morris's failures might have been due to destruction of the antipernicious anemia factor by peptic activity.

Certain experiments have been performed with the object of removing or inactivating the pepsin in gastric juice, prior to concentration and purification. A preliminary report follows, describing briefly the results in two cases.

The pepsin content of normal gastric juice was removed by precipitation with acetone at the iso-electric point,<sup>19</sup> the process was carried out at around 0 C to inhibit peptic activity. The pepsin precipitate having settled the supernatant material was concentrated in vacuo at 37 C to a reduced volume. After treatment with 50 per cent alcohol to remove reaction-producing substances, it was further concentrated to a volume suitable for a single intramuscular injection.

The first pernicious anemia patient received an intramuscular injection representing originally 540 cc of gastric juice. On the third day, at a red cell level of 19 millions, the reticulocyte percentage was 24.5 and a number of nucleated red cells were found. The erythrocyte count rose to 28 millions on the tenth day and continued to rise to 37 millions at the end of three weeks. The count then remained stationary until brought to normal by intramuscularly administered liver extract. This patient had a rather severe local reaction.

The second patient, whose initial erythrocyte count was 28 millions, received a similar injection of concentrate. The reticulocytes numbered 21 per cent on the third day, with many nucleated red cells appearing from the third to the tenth day. The erythrocytes rose to 38 millions on the tenth day and to 44 millions on the twenty-second day. This patient was reported to have fever and malaise but no local reaction.

Further collaborative work on this subject is in progress. It is hoped that it will be possible to report on the applicability of the principle described to the preparation of extracts of stomach mucosa and of desiccated gastric mucosa, as well as of concentrates of pressed animal stomach juice, a material having no present commercial value.

## SUMMARY AND CONCLUSIONS

1 Pepsin is antagonistic to the antipernicious anemia factor in stomach (Castle's "intrinsic factor").

(a) The feeding of pepsinized ventriculin was ineffective in pernicious anemia.

(b) The feeding of depepsinized gastric mucosa without the addition of beef, was effective in pernicious anemia.

<sup>18</sup> This work is to be found chiefly in the following publications: Morris, R. S. Schiff, Leon Burger, George, and Sherman J. E. A Specific Hematopoietic Hormone in Normal Gastric Juice. *J. A. M. A.* 98: 1080 (March 26) 1932. *Am. J. M. Sc.* 184: 778 (Dec.) 1932. Morris, R. S. Schiff, Leon Foulger, J. H. Rich, M. L. and Sherman J. E. *Brit. M. J.* 2: 1050 (Dec. 10) 1932. Treatment of Pernicious Anemia. *J. A. M. A.* 100: 171 (Jan. 21) 1933. Sturgis and Isaacs. <sup>4</sup> Sturgis.

(c) The feeding of depepsinized gastric mucosa, incubated with dilute hydrochloric acid, without the addition of beef, was effective in pernicious anemia

(d) The feeding of depepsinized gastric mucosa, incubated with dilute hydrochloric acid and pepsin, was ineffective in pernicious anemia

(e) The feeding of normal gastric juice peptically inactivated, was effective in pernicious anemia without the addition of beef or other source of 'extrinsic factor'

2 These experiments speak against the existence of an "extrinsic factor" as conceived by Castle

3 Castle's basic experiments may now be explained by a mechanism which excludes the action of the so-called extrinsic factor. This is based on the demonstrated antagonism of pepsin toward the antipernicious factor and also on the known adsorptive capacity of protein for pepsin. Sturgis and Isaacs' experiments are similarly explained

4 A new method for making oral and injectible stomach preparations is available in which the antagonistic action of pepsin is removed

Medical Arts Building

## EFFECT OF PROGESTIN AND ESTROGENIC SUBSTANCE ON HUMAN UTERINE CONTRACTIONS

VALUE OF PROGESTIN IN THE TREATMENT OF HABITUAL AND THREATENED ABORTION

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Theoretical concepts of gynecologic endocrinology when applied clinically have proved very disappointing in the past. There have been so many optimistic theories expounded as to the value of hormones in the treatment of numerous disorders of the female genital tract, with almost an equal number of clinical failures, that gynecologists hesitate to place confidence in any of these claims. Recently certain definite advances have been made, the merit of which is beginning to receive recognition from even the more conservative gynecologists

The increasing knowledge of the physiologic role of hormones during pregnancy and parturition has clarified our understanding of the mechanism of the onset of labor and the occurrence of spontaneous abortion

The work of Fraenkel<sup>1</sup> in 1903, who demonstrated that the removal of the corpus luteum of the rabbit in early pregnancy resulted in absorption or premature expulsion of the fetus, offered a solid foundation for a series of important advances

From the time the ovum is fertilized until the termination of labor, the complementary and also the antagonistic action of the estrogenic principle and progestin are constantly at work. Weichert,<sup>2</sup> Corner and Allen<sup>3</sup> and

Clauberg<sup>4</sup> have demonstrated that progestin prepares the endometrium for the reception and nourishment of the fertilized ovum subsequent to the preliminary influence of the estrogenic principle. Allen and Corner<sup>5</sup> conclusively proved that progestin is necessary for the conservation of early pregnancy. Knaus<sup>6</sup> and Manzi<sup>7</sup> showed that progestin maintains the uterus in a state of quiescence during pregnancy and that the uterus becomes sensitive to preparations of the posterior lobe of the pituitary when the influence of the corpus luteum declines. Reynolds and Allen<sup>8</sup> inhibited estrus motility in rabbits with progestin. Hisaw<sup>9</sup> demonstrated the ability of progestin to nullify the effect of posterior pituitary extract. Estrogenic substance, on the other hand, sensitizes the uterus to the oxytocic principle of the pituitary, thus stimulating uterine contractions.<sup>10</sup> Parkes,<sup>11</sup> Kelly<sup>12</sup> and Zondek and Aschheim<sup>13</sup> were able to produce abortion in animals with excessive doses of estrogenic material. The manner in which the estrogenic principle sensitizes the uterus to the oxytocic principle of the posterior lobe of the hypophysis is not clear. It is still debatable whether it stimulates an increased production of this hormone.

The work of the Smiths<sup>14</sup> indicates that progestin maintains a physiologic balance of estrogenic hormone during pregnancy by promoting its excretion through the kidney when present in excessive amounts. This has not been confirmed. As gestation advances, the amount of estrogenic substance increases, reaching a maximum at term. In this way the balance between the estrus-inducing principle and progestin is disturbed, the estrogenic principle becomes dominant and sensitizes the uterus to the oxytocic principle of the posterior lobe of the pituitary gland and labor ensues. Allan and Dodds<sup>15</sup> and others expound this theory. We believe that the irritability of the sympathetic nervous system, the intrinsic nervous mechanism of the uterine wall and possibly the hormones from the thyroid or the adrenal glands are factors which play a part in the onset of labor. The degree to which these factors influence the onset of labor has not been demonstrated experimentally. Miklos<sup>16</sup> was able to prolong gestation in the rat with aqueous extracts of corpora lutea.

It is entirely possible that a deficiency of progestin or an excess of the estrus-producing hormone would

4 Clauberg C. Experimentelle Untersuchungen zur Frage eines Mausestestes für das Hormon des Corpus Luteum. Zentralbl f Gynak 54: 1154 (May 10) 1930

5 Allen W M and Corner G W. Physiology of the Corpus Luteum. III. Normal Growth and Implantation of Embryos After Very Early Ablation of the Ovaries Under the Influence of Extracts of the Corpus Luteum. Am J Physiol 88: 340 (March) 1929

6 Knaus H. Zur Ursache des Geburtseintrittes. München med Wchenschr 75: 553 (March 30) 1928

7 Manzi L. Azione inibente degli estratti di corpo luteo sul travaglio provocato dagli estratti di lobo posteriore dell'ipofisi nelle varie epoche della gravidanza. Arch di ostet e ginec 19: 220 (May) 1932

8 Reynolds S R M, and Allen W M. The Effect of Progestin Containing Extracts of Corpora Lutea on Uterine Motility in the Unanesthetized Rabbit with Observations on Pseudopregnancy. Am J Physiol 102: 39 (Oct) 1932

9 Hisaw F L, Foyd H L and Meyer R K. The Corpus Luteum. II. Methods of Extraction. Physiol Zool 3: 135 1930

10 Brouha L and Simonnet H. Action du liquide folliculaire sur la contractilité utérine. Compt rend. Soc de biol 101: 366 (June 7) 1929

11 Bourne A W and Burn J H. The Synergistic Action of Oestrin and Pituitary Extract on the Isolated Uterus. Lancet 2: 1020 (Nov 17) 1928

12 Kelly G L. The Effects of Injections of Female Sex Hormone (Oestrin) on Conception and Pregnancy in the Guinea Pig. Gynec & Obst 52: 713 (March) 1931

13 Zondek Bernhard and Aschheim Selmar. Ovulation in der Gravidität ausgelöst durch Hypophysenvorderlappenhormon. Endokrinologie 1: 10 (Jan) 1928

14 Smith G V S and Smith O W. The Role of Progestin in the Female Reproductive Cycle. J A M A 97: 1857 (Dec 19) 1931

15 Allan H and Dodds E C. Investigations into Cause of Onset of Labor. J Obst & Gynaec Brit Emp 37: 447 1930

16 Miklos L. Experimentelle Verlängerung der Schwangerschaft mittels Corpus Luteum Extrakten. Zentralbl f Gynak 54: 1755 (July 12) 1930

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1 Fraenkel L. Die Funktion des Corpus Luteum. Arch. f. Gynak. 68: 438 1903

2 Weichert C H. Production of Placentomata in Normal and Ovariectomized Guinea Pigs and Albino Rats. Proc Soc Exper Biol & Med 23: 490 (March) 1928

3 Corner G W and Allen W M. Physiology of the Corpus Luteum. II. Production of a Special Uterine Reaction by Extracts of the Corpus Luteum. Am. J. Physiol 88: 326 (March) 1929

result in spontaneous abortion or premature labor. Substitutional therapy with the corpus luteum hormone, therefore, should be indicated in cases of threatened and habitual abortion. In this paper we are concerned with (1) the management of these cases and (2) the effects of estrogenic substance and progestin on the contractions of the human parturient uterus.

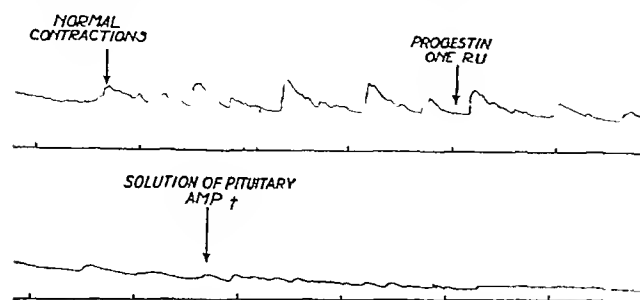


Fig 1—The effect of progestin on normal uterine contractions. Metreurynter bag introduced into the uterus; normal contractions initiated in about ten minutes. These were allowed to continue for twenty minutes at which time 1 rabbit unit of progestin was injected. The contractions were reduced in strength within five minutes. After eighteen minutes one ampule of solution of pituitary stimulated very small contractions for ten minutes, after which no further contractions were noted. Time markers indicate five minutes.

Last November we<sup>17</sup> reported a series of nineteen cases of threatened and habitual abortion treated with a commercial preparation of progestin. Successful results were obtained in fourteen of these patients. Our clinical observations convinced us of the therapeutic value of progestin in these cases. Similar results have been obtained by Anteck and Zwolinski,<sup>18</sup> Wolfsohn<sup>19</sup> and others.<sup>20</sup> We have continued this investigation and now report forty-one cases of threatened and habitual abortion treated with progestin. Successful results were obtained in thirty-four of these patients as shown in the accompanying table. In ninety-four previous pregnancies, sixty-five spontaneous abortions occurred. In the original series of nineteen cases we were able to follow a definite procedure, with one product given in predetermined dosage and at definite intervals. The amount of the hormone used originally was empirically 1 rabbit unit (Corner).

Patients with threatened abortion received 1 rabbit unit twice daily until all symptoms subsided or the patient aborted. In the treatment of habitual abortion 1 rabbit unit of progestin prepared and standardized according to the method of Corner, as described in a previous paper,<sup>17</sup> was given prophylactically twice

#### Results of Treatment

| Group                              | Cases | Success | Failure |
|------------------------------------|-------|---------|---------|
| Threatened abortions only          | 11    | 10      | 1       |
| Habitual abortions only            | 13    | 10      | 3       |
| Threatened and habitual abortions  | 17    | 14      | 3       |
| Total cases treated with progestin | 41    | 34      | 7       |

weekly from the time the diagnosis of pregnancy was made until the thirty-second week of gestation. Unfortunately, the manufacture of our first preparation of progestin was discontinued in the midst of our series.

17 Krohn Leon, Falls F. H. and Lackner J. E. On the Use of the Lutein Hormone Progestin in Threatened and Habitual Abortion. *Am J Obst. & Gynec.* 29: 198 (Feb.) 1935.

18 Anteck S. and Zwolinski T. W. sprawie poronien nawykowych. *Polska gaz lek.* 7: 845, 1928.

19 Wolfsohn H. Therapie des habituellen Aborts. *Med Welt* 6: 1616 (Nov. 5) 1932.

20 Wenzler E. Zur Frage des habituellen Abortus. *Med Klin* 29: 563 (April 21) 1933. Bracht Die Behandlung des habituellen Abortus. *Therap. d. Gegenw.* 74: 551 (Dec.) 1933.

However, the Schering Corporation was kind enough to supply us with a similar product standardized in Clauberg units. The doses of this preparation varied from one-twenty-fifth rabbit unit to 1 Clauberg rabbit unit according to the severity of the symptoms. The smaller doses seemed to be clinically effective, although we felt that the larger doses gave a greater margin of safety and should be used in the more urgent cases.

The clinical observation of patients treated for abortion left no doubt in our minds that progestin inhibits uterine contractions. Reynolds<sup>8</sup> inserted a bag into the uterine cavity of a rabbit through an artificial fistula and demonstrated inhibition of estrus motility with progestin. Novak and Reynolds<sup>21</sup> were able to decrease uterine motility in rabbits with ovaries intact and also in the castrated animal with a preparation of active principle of the anterior lobe of the hypophysis from human pregnancy urine. In order to demonstrate the inhibiting action of progestin in the human being experimentally, we adopted the method of Moir,<sup>22</sup> recently used by Adair and Davis,<sup>23</sup> Koff<sup>24</sup> and others. This consists of introducing a hydrostatic bag into the uterus of a seventh day parturient patient under sterile precautions. In our earlier experiments the bag was filled with air. We used a water system with a mercury manometer in our later work because we were thus able to maintain a more constant pressure. Kymographic

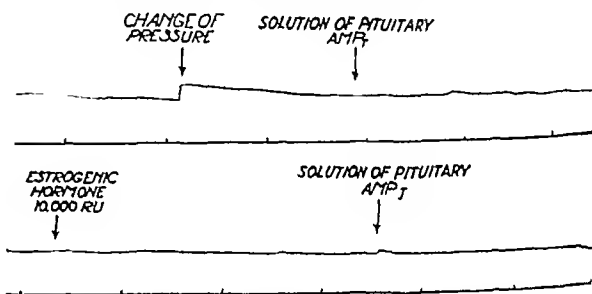


Fig 2—The influence of progestin in nullifying the action of solution of pituitary on uterine contractions when given one and three-quarter hours before. One rabbit unit of progestin was given one hour before the introduction of the hydrostatic bag. No uterine contractions occurred. About forty-five minutes after the introduction of the bag the pressure was increased in an effort to stimulate contractions; no contractions resulted. One ampule of solution of pituitary was given. Very weak contraction waves were seen. In sixteen minutes 10,000 rat units of estrogenic substance was injected to sensitize the uterine muscles to solution of pituitary. No contractions resulted. Eighteen minutes later a second ampule of solution of pituitary was given; no uterine contractions were stimulated. Time markers indicate five minutes.

tracings of the uterine activity were obtained in this way. Normal uterine contractions and the effects of solution of pituitary, estrogenic substance and progestin on the human puerperal uterus were investigated. The experiments were allowed to proceed for periods of two and three hours, during which time continuous tracings were made. Although the results were quite consistent, slight individual variations were noted.

#### RESULTS

**Normal Control**—The normal response to the distended bag varied considerably in different individuals both in frequency and in intensity of the contractions. This variation appeared to have a relationship to the parity, the length of labor, and the physical make up.

21 Novak Emil and Reynolds S. R. M. The Cause of Primary Dysmenorrhea. *J. A. M. A.* 99: 1466 (Oct. 29) 1932.

22 Moir C. Clinical Comparison of Ergotamine and Ergotamine. *Brit M J* 1: 1022 (June 4) 1932.

23 Adair F. L. and Davis M. E. Study of Human Uterine Motility. *Am J Obst. & Gynec.* 27: 383 (March) 1934.

24 Koff A. K. A Study of the Action of Ergot on the Human Puerperal Uterus. *Surg. Gynec. & Obst.* 60: 190 (Feb.) 1935.

of the patient. Contractions of a definite regularity and intensity were established usually within twenty to thirty minutes.

**Solution of Pituitary**—Following the administration of 1 cc of solution of pituitary a marked tetany of the uterus appeared within three to five minutes. This tetany continued for from five to ten minutes and was fol-

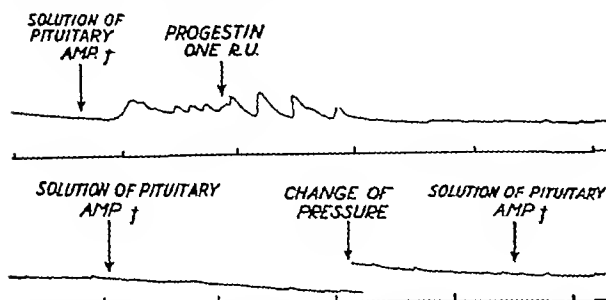


Fig 3—The effect of progestin on uterine contractions stimulated by solution of pituitary. One ampule of solution of pituitary was injected after the metreurynter bag had been inserted into the uterus. Tetanic contractions started in two and a half minutes. Six minutes later 1 rabbit unit of progestin was given as the tetanic contraction stimulated by the solution of pituitary began to be replaced by rhythmic contractions. In five minutes the rhythmic contractions subsided and the uterus failed to respond to two further doses of solution of pituitary. Time markers indicate five minutes.

lowed by regular rhythmic, vigorous contractions, which lasted for a variable length of time. It is interesting to note that during the time of the experiment the uterus usually failed to respond to a second dose of solution of pituitary.

**Progestin**—The effect of intramuscular injections of progestin in 1 rabbit unit doses (Corner) on normal contractions and those contractions of the uterus produced by solution of pituitary was studied. Normal uterine contractions were completely inhibited in the great majority of cases. The effect was surprisingly rapid, beginning to show itself in from five to ten minutes and lasting for the entire two or three hours during which the tracings were recorded (fig 1). We are unable to state how long this action persists because

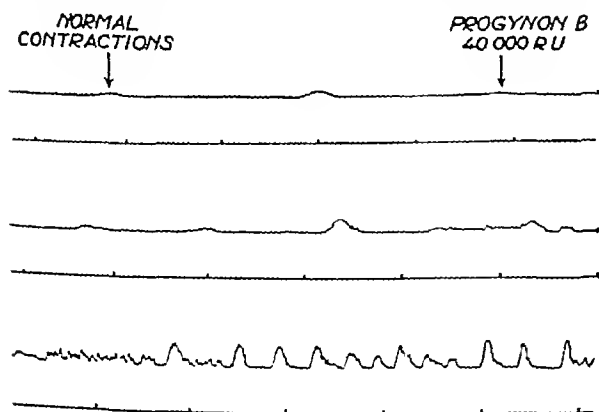


Fig 4—The effect of Progynon B on uterine contractions. The bag was introduced and produced very slight contractions. It was allowed to act for approximately one half hour. 40 000 rat units of Progynon B was then injected. The contractions began to increase in frequency and amplitude in twenty minutes. The first effect was a series of tetanic contractions followed by rhythmic contractions typical of action caused by solution of pituitary. Time markers indicate five minutes.

of the obvious difficulties encountered in utilizing patients for longer periods of time. In most instances the inhibitory effect obtained consisted of completely suspending all motility of the uterus. The powerful

antagonistic action of progestin to solution of pituitary was demonstrated in several ways. Solution of pituitary elicited but little or no response while the uterus was in a state of quiescence from progestin (figs 1 and 2). If progestin was administered during a reaction produced by solution of pituitary, contractions disappeared in from ten to twenty minutes (fig 3). Attempts to sensitize the uterus to solution of pituitary with estrogenic substance failed during the period in which the uterus was under the influence of progestin (fig 2).

**Effect of Progynon B**—The effect of the estrogenic substance Progynon-B (Schering) was observed. Doses of 10,000, 20,000 and 40,000 rat units were administered intramuscularly after a satisfactory control of normal contractions had been recorded. No change in normal contractions was noted after 10 000 rat units had been administered. Twenty thousand rat units produced a moderate increase in intensity and frequency of the uterine contractions. Forty thousand rat units produced a tetany of the uterus one hour after administration, which lasted for about ten minutes. This tetany was followed by regular, frequent, vigorous contractions of the uterus for the duration of the experiment (fig 4).

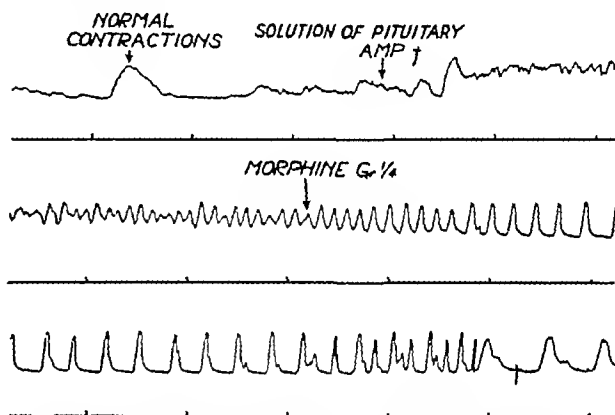


Fig 5—The effect of morphine on uterine contractions. Normal contractions stimulated by distention of the metreurynter bag. Injection of solution of pituitary produced tetanic contractions followed by rhythmic contractions of the uterus. Morphine one-fourth grain (0.016 Gm) hypodermically showed no inhibitory effect on uterine contractions. Time markers indicate five minutes.

#### COMMENT

Practically all the experimental studies of the effect of progestin on uterine contractions to date have been done with animals. Since we realized that the results of animal experimentation do not always hold in human beings, we felt that experimental evidence of the action of the estrogenic substance and progestin on the human puerperal uterus was of importance. The method of Moir<sup>22</sup> proved both safe and valuable in giving this experimental evidence. Little is known about the optimum amount of a given hormone to be used in treating a particular gynecologic condition. The dosages in these experiments were necessarily empirical. We realize that they were not absolutely accurate although the material was fresh, because the methods of standardization used in assaying this material are open to error, and solutions of progestin are unstable. It would seem that this procedure offers an excellent method of studying the response of the human postpartum uterus to graded doses of hormones. From such studies one may learn how to apply endocrine therapy more intelligently in related clinical problems. One can gain con-



siderable knowledge of the efficiency and strength of estrogenic substance and progestin preparations in this way

The effect of morphine on human uterine contractions was studied because it was probably the most common drug used in the treatment of threatened abortion previous to the advent of progestin. We were unable to demonstrate any inhibitory effect on uterine contractions stimulated by solution of pituitary with one-fourth grain (0.016 Gm.) of morphine sulphate given hypodermically, in spite of the fact that the usual narcotic effect on the patient was obvious (fig 5). Indeed, the strength and frequency of the uterine contractions seemed to be actually stimulated by the drug. This observation confirms the work of other investigators and is important, since it explains certain clinical results obtained during labor after the use of morphine.

We do not know by what mechanism estrogenic substance augments the human uterine contractions. It may act directly on the uterine musculature or it may sensitize the uterus to the oxytocic principle of the posterior lobe of the pituitary present in the individual. It would seem that the latter is the more likely mechanism, because the type of response elicited resembled the reaction produced by the injection of solution of pituitary. Therefore until there has been similar investigation in the pregnant and the normal nonpregnant uterus, the results are of value only in the parturient uterus.

#### CONCLUSIONS

1 The use of progestin in habitual and threatened spontaneous abortion is logical and valuable.

2 Thirty-four of the forty-one cases of threatened and habitual abortion were treated successfully with the corpus luteum hormone progestin.

3 The estrogenic substance Progynon-B stimulates contractions of the puerperal human uterus in doses of 20,000 and 40,000 rat units.

4 One rabbit unit (Corner) of progestin inhibits human uterine contractions in a seventh day parturient patient.

5 One rabbit unit (Corner) of the lutein hormone progestin completely nullifies the effect of 1 cc. of solution of pituitary whether given before or after the response to the injection of solution of pituitary.

6 The hypodermic injection of one-fourth grain of morphine sulphate not only failed to diminish contractions of the human puerperal uterus produced by the injection of 1 cc. of solution of pituitary but actually seemed to augment them.

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#### ABSTRACT OF DISCUSSION

DR. SAMUEL R. M. REYNOLDS, Brooklyn. There is one aspect of this work which interests me especially, that is the action of progestin and of estrogenic substance on the uterine contractions as the authors demonstrated in the slides. Qualitatively these results confirm the rabbit data. They differ, however, in two important respects. As regards progestin in the human being we have just seen that the effect is very prompt. In the rabbit, Dr. Willard Allen and I have just completed experiments in which we found that crystalline progestin inhibits uterine contractions, 1 rabbit unit requiring approximately one hour, and two tenths of a rabbit unit requiring approximately six hours. The authors have shown that estrogenic material induces rhythmic contractions of the human uterus within a few minutes. In the rabbit with intravenous injections, at least ten to twelve hours must elapse before the beginning of the effect of the substance can be seen and at

least from twenty to twenty-four hours must pass before maximal motility is observed. I think that the differences between these results in the human being and our results may be explained in part at least, by the fact that in their experiments the ovaries of their subjects are secreting the estrogenic principle so that he is adding this substance to that already circulating in the blood stream. In our experiments we use the castrated animal with none of the substance circulating in the blood stream. From the data of the authors it would seem that 20,000 or 40,000 units of estrogenic substance induces uterine contractions. Data published by Drs. Robinson, Datnow and Jeffcoate indicate that in missed abortion, uterine inertia and attempts to induce premature labor, hundreds of thousands of rat units of the principle must be injected to induce uterine contractions and then, to expel the products of conception or to induce dilatation of the cervix. The action of the estrogenic substance must be supplemented by quinine, extract of posterior pituitary or some other oxytocic agent. One must not be misled, therefore, by the small dosage that Dr. Falls and his co-workers find effective and expect such amounts to be uniformly effective under all circumstances.

DR. EMIL NOVAK, Baltimore. The general idea behind this plan of treatment seems a sound one, because of the accepted importance of the corpus luteum in the early phases of pregnancy and because of the inhibiting effect of progestin on uterine contractions. Furthermore, it seems safe to assume that the preparation employed is a potent one, for it is presumably the one with which Kaufmann, Claiberg and other German investigators were able to produce typical progestational changes in the endometrium after preliminary treatment of the latter with estrogenic material. The surprising thing is that clinical results should be obtainable with the relatively small doses employed in this series, especially if it is recalled that a dosage of something like 60 rabbit units is necessary to produce the progestational picture in the human endometrium. The stronger ampules of the commercial preparation that was used by Dr. Falls and his associates contain only one fifth the European rabbit unit. For this reason, and because of the frequency with which the threat of abortion fails to materialize with no other treatment than complete rest and possibly simple sedatives, it is not easy to evaluate accurately the value of biologic agents in this condition. The same difficulty pertains to the treatment of the distressing cases of habitual abortion. And yet I believe this plan of treatment to be logical and worthy of continued trial, always in as critical and analytic a fashion as possible.

DR. J. P. PRATT, Detroit. I am greatly interested in this work of Dr. Falls and his associates, especially on account of the results obtained with the small dosage of progestin. It seems to check very well with the relative amount of progestin in the human being as compared to animals. In the hog corpora lutea I find a positive test, 1 rabbit unit in 20 Gm. of material, while in the human corpus luteum I have recently found (not yet published) that it takes about 75 Gm. of material to give a weakly positive test. That would correspond roughly to from fifty to seventy-five human corpora lutea for 1 rabbit unit. Therefore, under natural conditions the amount of progestin in the human corpus luteum is very small. It has been found by Gerhardt and others that there are 10 rabbit units present in the placenta. One wonders, therefore, just what effect the expulsion of the placenta and the fact that the corpus luteum is not actively secreting progestin at the time of delivery may have on the subsequent contractions during involution following labor and the expulsion of the placenta.

DR. LEON KROHN, Chicago. Frankly, we were very much surprised to note such a rapid inhibitory effect of progestin as mentioned by Dr. Reynolds. I am unable to offer any explanation except that the patients whom we used probably had normal ovaries and normal pituitary glands. As Dr. Pratt already pointed out it may take only an insignificant amount of progestin to produce this inhibitory effect in the human being since it is present in the human corpus luteum in such minute quantities. It must be remembered that when 1 rabbit unit of the corpus luteum hormone is administered the total effect of this dosage is not obtained at any one time. It is most likely distributed over a period of at least several hours and probably longer. We are unable to state exactly how long the effect of

progestin lasts because of the obvious difficulty encountered in keeping a bag in the uterus for a period longer than two or three hours. Thus, the results obtained were actually produced by a much smaller amount than the total dosage administered. The effect of the estrogenic substance (progynon B) was not as rapid as that of progestin. No definite change in the character of the uterine contractions was noticed for a period of forty-five minutes from the time it was administered. Here too when 40 000 rat units was administered the stimulation was probably produced by a small fraction of that amount. We were surprised to find that the estrogenic substance augmented human uterine contractions, because we have attempted to induce labor with as much as 200 000 rat units given every two hours until five doses had been administered, without noting any definite effect. Dr. Novak indicated that one would not expect small doses of progestin to be effective in threatened and habitual abortion. Originally, we used 1 rabbit unit doses standardized by the method of Corner. Later we used the European unit dosage, which is about one fifth as potent. We used larger doses in the more urgent cases of threatened abortion and the smaller amounts were administered prophylactically in habitual abortion. Clinically doses as small as one twenty-fifth of a European unit appeared to be effective. We have treated several cases of premature labor in which severe regular contractions were completely stopped by administering 1 Corner unit twice daily. The question arises as to whether there is justification for treating a case of threatened abortion. Some authorities believe that it is an attempt on the part of nature to expel an abnormal fetus. Thus far, all the babies delivered in the successfully treated cases were normal. However, in two of the failures that aborted the fetuses were abnormal.

### CLINICAL USE OF CYCLOPROPANE AND TRIBROM-ETHANOL IN AMYLENE HYDRATE

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Trimethylene known as cyclopropane, was described by Freund<sup>1</sup> in 1882. It is an isomer of propylene, cyclic in structure, and is a saturated hydrocarbon which exhibits some characteristics of an unsaturated hydrocarbon. It is a colorless, mildly pungent gas with a molecular weight of 42.05 and a density of 1.46. It is marketed in steel cylinders, in almost pure form at a pressure of 75 pounds per square inch, at which pressure it liquefies. In the percentage in which it is clinically used to produce anesthesia it is almost odorless.

Cyclopropane was first used experimentally for anesthesia in animals by Lucas and Henderson<sup>2</sup> in 1929. These observers, using a somewhat impure preparation limited their work to animal experimentation. Waters, Roventine and their associates<sup>3</sup> having received this agent in purified form, continued the experimentation on animals and extended the work to clinical administration. Extensive pharmacologic and physiologic investigations of this agent with electrocardiographic studies were carried out by Seever and his associates<sup>4</sup> at the University of Wisconsin. Liver and kidney reactions due to its use were investigated and reported absent by Bourne and his co-workers<sup>5</sup> of Montreal. Other

reports of its clinical use have appeared in the literature since the first report from the University of Wisconsin in January 1934.<sup>6</sup> The present report is based on more than 900 administrations from October 1933 to June 1935.

Cyclopropane is a potent anesthetic gas producing unconsciousness in from twenty seconds to three minutes. It is pleasant to inhale when properly administered and causes no choking, burning or strangling sensations. It does not exhibit the characteristic tendency of nitrous oxide or ethylene to produce dreams or other vagaries of the psychic system. The awakening is extremely rapid and resembles the awakening after normal sleep. Laryngospasm may occur when cyclopropane is given in high concentrations. It probably produces more mucous secretion than nitrous oxide or ethylene, if patients have not received preliminary medication. Nausea, headache, dizziness and disorientation in my experience, have been less with cyclopropane than with other inhalation agents.

Differentiation of the accepted stages of anesthesia is difficult, owing to the rapid action of the agent. Grave circulatory risks or extremely ill patients are safeguarded by the high oxygen percentage in the anesthetic mixture. The margin of safety has appeared greater with the use of cyclopropane than with that of any other agent at present in use. Passive breathing, according to Guedel's technic,<sup>7</sup> may be produced with little or no danger. This procedure is of value to the operator in surgery of the lung, gallbladder, diaphragm, stomach and liver and is very important when roentgenograms are indicated for ureteral or kidney visualizations when respiratory movements fog the picture.

Cyclopropane anesthesia has been attempted in laboratory animals by inhalation insufflation and intravenous and rectal administration. It is not satisfactory when given intravenously or rectally. I have induced anesthesia in fifteen tonsil and adenoid cases with cyclopropane and oxygen by a closed technic and maintained it by cyclopropane insufflation. None were premedicated. Thirteen were satisfactory. In two the anesthesia was too light. This method was discarded because of expense. Practically it appears that the best form of administration of this agent at present is by a completely closed method with carbon dioxide absorption.

Cyclopropane may be administered with almost any form of apparatus from oral insufflation into the open mouth to the most elaborate closed endotracheal air ways with metered flow of various gases accurately measured amounts of anesthetic vapors and carbon dioxide control. The use of the Flagg or Bennett inhaler with or without preliminary medication gave good results but lack of carbon dioxide control and gross leakage made this technic prohibitive. It required several gallons of cyclopropane for a simple procedure.

Ordinary care against ignition or explosion hazard must be used with cyclopropane, for, like ether, ethyl chloride and other accepted agents, it is inflammable. No reports of explosions or flashes in clinical use have been found in the literature or communications to this time.

Surgical procedures of all types, including operations on the eye, central nervous system, thorax, abdomen, superficial operations, and obstetric gynecologic and otolaryngologic operations have been performed with

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<sup>1</sup> Freund, August. Ueber Trimethylene. *Monatsh. f. Chem.* 3: 625-635 (July 13) 1882.

<sup>2</sup> Lucas, G. H. W., and Henderson, V. E. A New Anesthetic Gas, Cyclopropane. *Canad. M. A. J.* 21: 173-175 (Aug.) 1929.

<sup>3</sup> Stiles, J. A., Neff, W. B., Roventine, E. A., and Waters, R. M. *Anaesth. & Analg.* 13: 56 (March-April) 1934.

<sup>4</sup> Seever, M. H., Meek, W. J., Roventine, E. A., and Stiles, J. A. *J. Pharmacol. & Exper. Therap.* 51: 1 (May) 1934.

<sup>5</sup> Ragnin, B. B., and Bourne, Wesley. *Canad. M. A. J.* 31: 500 (Nov.) 1934.

<sup>6</sup> Waters, R. M. Personal communication to the author.

<sup>7</sup> Guedel, A. E., and Treweek, D. N. *Ether Anesth. & Analg.* 13: 263 (Nov-Dec) 1934.

cyclopropane anesthesia This report covers all these types except operations on the eye and thorax. I have administered cyclopropane in various combinations with anesthetic gases and vapors, with or without preliminary medication, including basal narcotics, in 917 cases listed in table 1. In only nine cases out of the 917 was the attempted use of this agent a total failure. Five

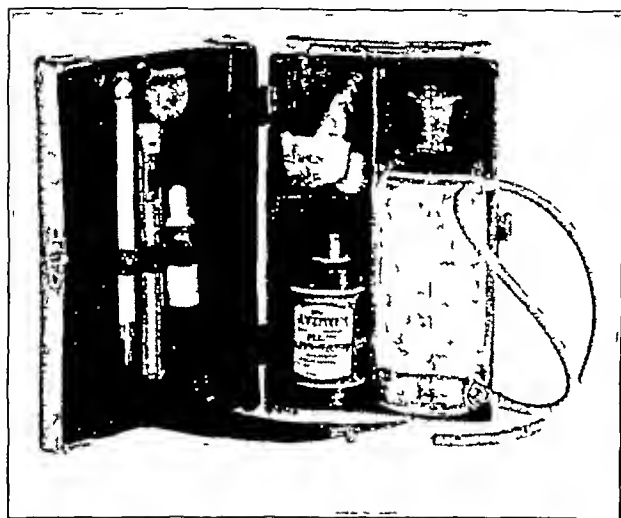


Fig 1—Outfit for apparatus used in the preparation and administration of tribrom-ethanol in amylene hydrate

were in the first seventy, two in the next 150 and two in the next 500. More than 720 patients received cyclopropane and oxygen by a carbon dioxide absorption technic. Approximately 550 of these received preliminary medication of morphine sulfate, one-sixth grain (0.011 Gm) with atropine sulfate,  $\frac{1}{160}$  grain (0.0004 Gm) and a basal narcosis of tribrom-ethanol in amylene hydrate. About 350 of these were supplemented with ether to secure a greater degree of relaxation. The average amount of ether per patient was 5.7 cc. In no cases were there fatalities from this combination of agents. In two cases respiration was temporarily depressed below 14 per minute.

Tribrom-ethanol in amylene hydrate wherever used in this report refers to the 100 per cent solution marketed as "Avertin Fluid." One cubic centimeter of this fluid represents 1 Gm of tribrom-ethanol and 0.5 Gm of amylene hydrate. Tribrom-ethanol in amylene hydrate is used in this report only for producing basal narcosis and has been used by me in various combinations in more than 3,200 cases. From the extensive literature available regarding this drug it is obvious that a safe dose for general anesthesia is much greater than that required for basal narcosis.

The combined use of cyclopropane and tribrom-ethanol in amylene hydrate will prove satisfactory if three important factors are considered. These are careful selection of the patient, adequate apparatus for the administration of cyclopropane and tribrom-ethanol in amylene hydrate, and accurate timing of the anesthetic procedures.

To facilitate the preparation and administration of tribrom-ethanol in amylene hydrate, an outfit (fig 1) is presented. It consists of a carrying case measuring 9 by  $5\frac{3}{4}$  by  $3\frac{1}{2}$  inches, constructed of wood or fiber. On the door of this case is a rack which holds a special thermometer with only one reading indicated, namely, 40 C. This tends to eliminate error and calls attention

to the very important factor of correct temperature. Next in the rack is a standard 10 cc test tube, graduated in tenths (fig 2). Also in the rack is a space for the congo red test solution. The body of the box contains the mixing and administering flask on the right. On the left there are two compartments, the lower one for the 100 cc manufacturer's bottle of tribrom-ethanol in amylene hydrate. The upper compartment is intended for the cork, petrolatum and other accessories.

The flask is a stock "nasal douche bottle" with a wire hook snapped on to the small neck (fig 2). It has a nipple in one side near the base for attaching the rectal tube. The rectal tube size is 24 or 26 French. The flask is made of thin, heat-resisting glass. Therefore changes in temperature of the contents may be easily and rapidly made by placing the flask under either the hot or cold water tap, as indicated. Etched into one side of the flask, in metric units, are three tables or scales. The scale at the left reads from 0 to 220 and represents pounds of body weight; the line opposite each figure shows how much water should be used for a person of that weight. The center table is graduated from 0 to 6.5 cc and indicates the number of cubic centimeters of tribrom-ethanol in amylene hydrate to be used for the various weights. The table is so adjusted that at all amounts the mixture represents a 2.5 to 3.0 per cent solution of tribrom-ethanol in amylene hydrate. On the right is a table to be used only when this technic is not followed. It shows the number of cubic centimeters of water from 0 to 300.

The technic of using this apparatus is as follows. Tap water is run into the flask up to the line indicated by the patient's "relative weight" in the left scale.



Fig 2—Mixing and administering flask with table for proper solutions.

(Tap water instead of distilled water has been used in all but two of my last 2,500 cases and has been found satisfactory.) The temperature of the water is then adjusted to exactly 40 C. On the center table is then read the number of cubic centimeters of tribrom-ethanol in amylene hydrate for the patient's weight, and this amount is measured into the test tube and poured into the flask. Tribrom-ethanol in amylene hydrate

being thick and oily, adheres to this tube. To allow for this error it is necessary to add 0.2 cc more than the indicated amount. Two drops of congo red test solution is added directly to the mixture in the flask, the cork stopper inserted, the delivery tube closed by catching the rectal tube in the wire hook on the neck of the flask, and the flask vigorously shaken for from

TABLE 1—Combinations of Anesthetic Gases and Vapors

|   |  |     |
|---|--|-----|
| C <sub>2</sub> H <sub>6</sub> —               | Air  | 2   |
| C <sub>2</sub> H <sub>6</sub> —O              |  | 29  |
| C <sub>2</sub> H <sub>6</sub> —O—             | Ethyl chloride   | 1   |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Ether  | 37  |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine  | 33  |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and scopolamine   | 7   |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and ether   | 8   |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine butyl bromethyl barbituric acid basal                  | 1   |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine butyl bromethyl barbituric acid ether                  | 8   |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine tribrom-ethanol in amylene hydrate basal               | 378 |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine tribrom-ethanol in amylene hydrate ether               | 360 |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine tribrom-ethanol in amylene hydrate-nitrous oxide       | 3   |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine tribrom-ethanol in amylene hydrate-nitrous oxide-ether | 9   |
| C <sub>2</sub> H <sub>6</sub> —O              | Morphine and atropine tribrom-ethanol in amylene hydrate-ethylene            | 9   |
| C <sub>2</sub> H <sub>6</sub> —O              | Morphine and atropine tribrom-ethanol in amylene hydrate-ethylene-ether      | 11  |
| C <sub>2</sub> H <sub>6</sub> —O <sub>2</sub> | Morphine and atropine tribrom-ethanol in amylene hydrate-ether-chloroform    | 2   |
| Total   |  | 917 |

two to ten seconds. This is necessary to produce a perfect mixture. The mixture will now be a milky pink and will be under pressure. The tip of the rectal tube is anointed with petrolatum and inserted into the rectum only far enough to permit free flow of the fluid. Petrolatum, although a lubricant, is sufficiently sticky to prevent expulsion of the rectal tube by a nervous patient and is therefore preferred to other lubricants. The rate of injection is only as fast as the liquid will flow by gravity, the time consumed being usually less than ninety seconds. Should a fecal plug obstruct the flow, the flask is again stoppered and vigorously shaken. Owing to the expansion of the warmed alcohol in the closed container, sufficient pressure is developed to expel the plug. Tribrom-ethanol in amylene hydrate should not be injected under pressure except in obstetric cases, in which the normal flow may be obstructed by the natural processes.

Variations suggested in the technic are as follows. Patients with systolic blood pressure of more than 160 or less than 100 mm of mercury are given the mixture at a slower rate, from five to ten minutes being consumed for the injection. For normal average patients the weight indicated on the table is taken as the patient's actual weight. The patient's "relative weight" is the actual weight adjusted so that for elderly patients one tenth of the total dose is deducted for each ten years of age over 50. In patients with increased metabolism such as children athletes alcoholic patients and those with thyroid toxicity, the dose may safely be increased by 10 per cent as this technic is based on minimal amounts. For patients of any weight over 220 pounds (100 Kg), the same amounts of water and tribrom-ethanol in amylene hydrate are used as for patients weighing 220 pounds.

To arrive at this table figures collected from 1,200 cases were plotted in the following manner. Groups of ten average surgical patients of like weights and for various operative procedures were used as units. These

units were given different doses of tribrom-ethanol in amylene hydrate. A record was made of the dose per pound of body weight at which all of the ten in the unit arrived at the operating room with sufficient sedation to permit the introduction of a pharyngeal airway without stimulating a reflex or arousing the patient. The figures thus obtained for dose per pound of body weight (ordinate) were plotted against the body weights (abscissa), and the resulting curve is shown in figure 3. The largest dose in the entire series was 65 cc of tribrom-ethanol in amylene hydrate. With this maximum dose, eight patients who weighed over 350 pounds (159 Kg) exhibited satisfactory basal narcosis, although the heaviest, who weighed 408 pounds (185 Kg) received only 46 mg per kilogram.

The combined use of tribrom-ethanol in amylene hydrate and cyclopropane in detail is as follows:

1 A cleansing enema is administered the night before the operation, no enema the morning of the operation. A mild sedative may be used the night before operation.

2 One and one-half hours before the operation is scheduled, one-sixth grain (0.01 Gm) of morphine sulfate with  $\frac{1}{150}$  grain (0.0004 Gm) of atropine sulfate is administered by hypodermic.

3 From thirty to forty-five minutes before the operation tribrom-ethanol in amylene hydrate is administered by the technic described.

4 The patient should remain quiet in a darkened room for twenty minutes after the instillation of the tribrom-ethanol in amylene hydrate.

5 When the patient arrives in the operating room, a pharyngeal airway is inserted and the anesthesia face mask is adjusted and tested for a tight fit. The rebreathing bag of the anesthesia apparatus is filled almost to distention with oxygen. From three to five inhalations of oxygen are permitted in order to hyperoxygenate the patient and to test for leaks. The oxygen

TABLE 2—Figures Taken from Graph of Minimal Dosage

|   |                |
|---|----------------|
| 30 to 110 pounds  | 80 mg per Kg   |
| 110 to 130 pounds   | 76.5 mg per Kg |
| 130 to 145 pounds   | 75 mg per Kg   |
| 145 to 190 pounds   | 70 mg per Kg   |
| 190 to 220 pounds   | 65 mg per Kg   |
| All weights above 220 pounds to 408 pounds receive identical doses<br>i. e. 65 cc of tribrom-ethanol in amylene hydrate |                |

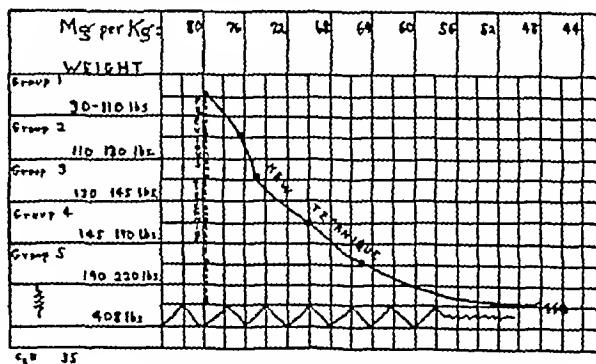


FIG 3—Chart to arrive at figures for minimal dosage (table 2)

flow-meter is regulated at from 250 to 400 cc. per minute as may be required to maintain the color of the patient and the distention of the bag.

6 Cyclopropane is flowed into the system at a rate of 600 cc. per minute for from fifteen seconds to five minutes. In 198 cases the average length of administration of cyclopropane at the rate of 600 cc. per minute to produce satisfactory surgical

anesthesia was two minutes and forty-eight seconds. If at any time during the operation anesthesia appears to be too light, cyclopropane is added at the same rate, i. e., 600 cc per minute. Unmetered amounts of oxygen may be given at such times as cyclopropane is added. If relaxation is not satisfactory, ether may be added to the gaseous mixture.

7 Immediately on return to bed, all patients having received this combination of basal narcosis and cyclopropane maintenance are given a hypodermic injection of from 2 to 3 cc. of a 25 per cent aqueous solution of pyridine-beta carbonic acid diethylamide (coramine). This is a routine procedure which has proved valuable as a prophylaxis against postanesthetic respiratory and cardiac depression occasionally seen prior to our use of this drug.

Although tribrom-ethanol in amylene hydrate tends to depress respiration, and although excessive concentrations of cyclopropane depress it markedly, yet respiratory depression has been absent in all but two cases of this series.

#### DISADVANTAGES

1 More time is required of the anesthetist than by many other technics. This disadvantage is of minor importance, as the first consideration in any surgical or anesthetic procedure should be the safety of the patient. To secure this, the anesthetist should examine the patient before operation, order the preliminary medication, mix and administer the basal narcotic and continue with him until his return to bed.

2 Cyclopropane is inflammable, as are most of the general anesthetic agents used at present as a routine. Reports of more than 8,000 administrations show no case of fire, flash or explosion.

3 Special equipment, dependable gages for indicating minimal flow of gases, means for efficient carbon dioxide control and equipment that will not leak are essential.

4 Danger from technical error of administration is greater than with nitrous oxide or ethylene, because although cyclopropane also is a gas, it requires a special technic for administration, owing to its marked potency.

5 The prohibitive cost of cyclopropane, when not administered by a proper technic, is a definite disadvantage.

6 The technic of combined tribrom-ethanol in amylene hydrate and cyclopropane anesthesia should not be used on patients exhibiting marked disease of the kidneys, liver or rectum. In these patients cyclopropane may be more safely used without tribrom-ethanol in amylene hydrate.

#### ADVANTAGES

1 There is an unusually wide margin of safety between the therapeutic and the toxic dose. Oxygen concentration is always very high. This is a great advantage, especially for patients suffering with anemia, starvation, shock, pulmonary or cardiac disease, or respiratory obstruction.

2 A wide range of depth of anesthesia is available without anoxemia, and the depth is easy to control.

3 Muscular relaxation is definitely increased over that possible with gases at present in use. This is especially advantageous for direct laryngoscopic intubation.

4 Marked contraction of the uterine muscle following cesarean section has been reported by several operators. In these cases cyclopropane and oxygen were used without preliminary medication or basal narcosis.

5 In the combined use of cyclopropane with tribrom-ethanol in amylene hydrate by the technic outlined,

there has been a decrease in operative and postoperative morbidity in this small series over that with other technics that I have used.

6 The psychic advantage of tribrom-ethanol in amylene hydrate is marked, as no other method of induction of anesthesia is more pleasant to the patient. In addition, apprehension is reduced as the agent cyclopropane is not widely known and the few reports available are unusually favorable.

7 The combined use of these two agents is proving satisfactory to the surgeon, the patient and the anesthetist by providing an efficient, pleasant and safe anesthesia.

#### SUMMARY

Clinical results in more than 750 cases indicate this method has given greater satisfaction in the hands of the author than other methods.

131 Riverside Drive.

#### ABSTRACT OF DISCUSSION

DR. HAROLD R. GRIFFITH, Montreal. I entirely agree with Dr. Wood regarding the advantages of the combination of tribrom-ethanol in amylene hydrate with cyclopropane. I believe that the use of these drugs in combination forms the nearest approach yet made to the mythical ideal anesthetic. The only point on which I feel I must differ is in the routine administration of morphine before giving tribrom-ethanol in amylene hydrate. My experience has been that this is not necessary and that the combination of morphine, tribrom-ethanol in amylene hydrate and cyclopropane sometimes produces severe respiratory depression, which never occurs if morphine is eliminated. I prefer to reserve morphine for postoperative pain and restlessness. I have just reported a series of 1,108 personal administrations of cyclopropane and I need only say that my experience confirms the favorable reports of Waters, Wood and other observers. Dr. Wood has used tribrom-ethanol in amylene hydrate in 85 per cent of his cases. I have given it to 33 per cent of my total cyclopropane patients and to 43 per cent of those who were having abdominal operations. Dr. Wood used some ether in 49 per cent of his cases. I have not found this necessary in more than 5 per cent. Fifty-eight patients for cesarean sections to whom I have given cyclopropane and oxygen alone have had remarkable freedom from postoperative disturbance, and I have found cyclopropane equally satisfactory in all types of operative obstetrics. The use of cyclopropane has not increased the cost of anesthesia in our hospital. Efficient modern equipment has made possible the use of this gas at no greater cost than the ethylene and nitrous oxide formerly used.

DR. HENRY S. RUTH, Philadelphia. It appears to me that the question evolves itself around whether or not tribrom-ethanol in amylene hydrate is the most advantageous preliminary medicament for cyclopropane as an anesthetic agent. I noted that only little more than 8 per cent of the reported series were administered with the usual morphine-atropine or morphine-scopolamine combination or alone, and that the remainder, or more than 91 per cent, were combined with the potent irreversible basal anesthetic. I have not felt the need for this high percentage of the basal anesthetics with cyclopropane for I found that this drug has possessed sufficient inherent potency to cope with the majority of surgical requirements. Since cyclopropane produces no stimulation of the respiratory function and the basal anesthetic is depressive in this respect, I have been a bit apprehensive of diminished minute volume respiration with their combination, not so much as to the respiratory rate but chiefly with regard to the volume, with its attendant physiologic by effect on the circulatory function. I have reserved this combination for patients who insisted on arriving at the operating room asleep or for patients in whom it seemed to me that it perhaps was best that they receive this combination to quiet them to this extent preoperatively. Employing 85 per cent of any one procedure is bearing on a routine. I have attempted to avoid any semblance of a routine.



with either agent or method and have endeavored to have their selection coincide with the pathologic conditions present in the patient and the peculiar requirements of the operative procedure contemplated. I believe that the outstanding success reported by Dr Wood with this combination is due to his huge experience with it, but I question the advisability of many others attempting this near-routine procedure. I believe that Dr Wood cannot be commended too highly for his original and ingenious apparatus which so facilitates the administration of tribrom-ethanol in amylene hydrate.

SIR FRANCIS E. SHIPWAY, London, England. I am much interested in Dr Wood's paper and would like to congratulate him on his extremely good results with tribrom-ethanol in amylene hydrate and cyclopropane. I should like to draw swords with Dr Wood over the question of dosage of tribrom-ethanol in amylene hydrate. I believe that the important factor that governs the dosage is the temperament of the patient. Each case must be treated individually if it is desired to obtain loss of consciousness before induction of anesthesia. Tables of dosage governed by age and weight are apt to mislead.

DR. T. DRYSDALE BUCHANAN, New York. Dr Wood and I have both used cyclopropane in connection with tribrom-ethanol in amylene hydrate preliminary or basal anesthesia. I have had exceptionally good results in those cases in which severe hemorrhage has occurred before operation. Dr Yandell Henderson has suggested that the addition of oxygen in these hemorrhage cases in which there has been deprivation of oxygen carriers would render anesthesia just that much safer, so that in hemorrhage cases and also in the bad cardiac risks cyclopropane will be found particularly valuable. With regard to the morphine, I have also given it before the tribrom-ethanol in amylene hydrate and I think that it is largely a question of respiratory depression as to when morphine should be given. Two years ago Dr Waters gave an elaborate résumé of the time at which morphine was given and of the acme of its action, and in the average case morphine reached its acme in an hour and a half. Therefore if morphine is given half an hour before the tribrom-ethanol in amylene hydrate one is getting two respiratory depressants with the morphine or the respiratory depressant action on the way up whereas it is wanted on the way down, and therefore it is rather important to give morphine a long time before tribrom ethanol in amylene hydrate is given.

DR. PHILIP D. WOODBRIDGE, Boston. Like Dr Ruth, I was afraid of the depressing effect on the respiration of the combination of tribrom-ethanol in amylene hydrate and cyclopropane so I was pleased to see Dr Wood administer it to some fifteen or twenty-five patients. I feel that Dr Wood has succeeded in striking a scale of very satisfactory doses for normal patients of varying weights. I agree with Sir Francis Shipway that in determining the dosage of tribrom ethanol in amylene hydrate the patient must be individualized. Dr Wood has made suitable provision for this in his description of the method. I have found too much respiratory depression when using cyclopropane after the liberal doses of barbiturates morphine and scopolamine which are ordinarily used with nitrous oxide and with ethylene. Therefore the doses of these preliminary narcotics have had to be reduced drastically when cyclopropane is used. As a result patients come to the operating room fairly well awake a condition particularly distressing to those with marked thyroid toxicity. In these patients especially I have found the mental quieting effect of Dr Wood's combination very advantageous. In the small number of cases in which I have followed Dr Wood's technic I have found that the cyclopropane anesthesia has run more smoothly and that troublesome effects such as laryngeal spasm have been absent.

DR. PAUL M. WOOD, New York. The use of morphine sulfate was discussed by several persons. Waters showed three actions: excitement, depression and sedation; the latter being the one desired. It appears about one hour after hypodermic administration. Smaller doses were tried and I am now using one-eighth grain (0.008 Gm) doses with fair results. I received my first cyclopropane in October 1933. To avoid overdosage minimal doses of tribrom ethanol in amylene hydrate ether and other medications were used. Satisfactory uniform results were not obtained until the technic reported was adopted. In answer to Dr Ruth no technic should become routine. These

720 cases were seen during a period of nearly two years in which time more than 2,200 anesthetics were given. I cannot answer the question about intratracheal technic, as I have used it in less than forty cases. Sir Francis Shipway states that one must allow for variations in individuals. True, but the reported scale was charted when every patient in the group of ten had sufficient sedation to permit the introduction of the pharyngeal airway. Thus many patients were more deeply asleep than necessary. Often if there was difficulty in proper placement of the airway the patient would rouse. Therefore the dose was small enough to avoid depression. I have the figures of cost in detail in ninety-two cases. Including morphine, atropine, tribrom-ethanol in amylene hydrate, soda lime and cyclopropane the average per case was \$1.01. Temperamental patients do require special variations in dosage. Experiments to find out how many one-sixth grain (0.01 Gm) doses of morphine were actually injected showed an average of less than 75 per cent. Of course reactions are variable, and larger or smaller doses given occasionally account for unusual results. I don't want to believe that a variation of a tenth of a milligram of tribrom-ethanol in amylene hydrate makes much difference in the individual case, but, when weight groups are analyzed from a total of more than 3,200 administrations, it is found that doses which vary on an average of only one or two tenths of a grain make the difference between success and failure. It is evident that any technic adopted should be strictly followed, especially by a new user.

## ADDISON'S DISEASE FOLLOWING ADRENAL DENERVATION

IN A CASE OF DIABETES MELLITUS

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This case is reported primarily to illustrate the possible serious consequences of adrenal surgery as a therapeutic procedure. For a number of years I have maintained that, with the possible exception of adrenal neoplasm, present knowledge of these glands does not warrant surgical intervention with them as a means of treating disorders elsewhere. Every investigator experienced in experimental work on the adrenals in animals is familiar with the great risk to life that attends operations on these organs. Nevertheless, there appears to be an increasing tendency, on the part of surgeons, to operate on the adrenals or their nerves for the relief of various diseases. This is done on the assumption that these glands, especially by their secretion of epinephrine, play a significant rôle in those conditions. Such an assumption, however, does not have the support of indisputable experimental or clinical evidence.

In the case that is reported here briefly, an attempt had been made to benefit a diabetic individual by denervating the adrenal glands. Addison's disease developed for which the patient was referred to me for treatment during a little more than the last five months of his life. The following condensed data from my records of the case are concerned mainly with this condition.

A letter received from the patient a man aged 25, May 1, 1935, stated that he had had diabetes for about five years. Right adrenal denervation was done in May 1934. The insulin requirement on a constant diet was decidedly reduced at first but soon rose considerably above the preoperation level (48 units) and finally came down to 60 units daily. His physician said that this was due to the fact that the other gland was working overtime to compensate for the one which had been denervated. He felt that another operation would probably effect a cure.

A few days after the second operation (left adrenal denervation in September 1934) the patient had a bad attack of nausea

and vomiting and repeated attacks occurred for a period of several weeks. A commercial adrenal extract (eschatin) and also salt capsules were administered during these weeks. Then followed persistent fatigue. Early in December another prolonged attack of nausea and vomiting developed, lasting from two to three weeks. During both attacks the temperature rose and the blood pressure fell. He lost about 35 pounds (16 Kg). The insulin requirement fluctuated at intervals. The commercial adrenal extract was continued without apparent benefit.

Following the second operation, the color of the skin became a "yellowish tan a little yellower than a brown from the sun." There were black spots, like freckles, on the face, hands and body. Fatigue was easily brought on by slight exertion and he felt tired all the time.

Additional information was obtained from the physician who treated him in the hospital for his condition before he came under my observation. Abstracts of his letter, dated May 13, 1935, follow:

The first adrenal denervation was done May 25, 1934 and the second, September 25. Following his second operation the syndrome of adrenal apoplexy supervened, the temperature for a few days was as high as 105 and the pulse rate was as high as 120 nine days postoperatively. Respirations were rapid and he was extremely drowsy. Subsequently, while in the hospital during December 1934, a similar attack was present. In the meantime he had a very poor appetite, had a tendency to lose weight, felt rather fatigued most of the time and developed some pigmentary changes of the skin and some localized very dark brown areas of pigmentation, about the face and forearms particularly.

The blood count, April 29, was 5,410,000 red cells, hemoglobin 97 per cent, and 6,750 white cells. Blood counts had been known to be as high as this or slightly higher previous to his operations. His basal metabolic rate on his last visit was minus 17 per cent.

At the times he has shown acute symptoms of cortical insufficiency, besides the general supportive measures usually used, he was given relatively large quantities of commercial adrenal extract (eschatin) up to 30 cc. daily, which it was felt helped him considerably at those periods. Smaller doses, however, had not produced any effect that was obvious to the patient.

My first examination of the patient was made at his home, in consultation with the family physician, May 12, 1935. The following is a brief summary of the notes recorded on this visit:

The family and early history of the patient were of no special significance. The patient had had diabetes for about five years, which was well controlled by moderate dietary regulation and insulin. His attention was called to an article in a lay magazine, reporting a meeting of surgeons in which denervation of the adrenal glands was recommended as a relief or cure for diabetes. Assured by a surgeon that no harm could result from the procedure, he submitted to an operation on one adrenal in May and the other in September 1934. Following the operations he experienced the train of symptoms previously described.

There was characteristic Addisonian pigmentation of the skin, with dark (ebony-colored) freckle-like spots on the face, hands, arms and neck. He complained of marked anorexia, frequent attacks of persistent nausea and vomiting, fatigue and dizziness on slight exertion, and he always felt tired and drowsy. He was restless during sleep. When he was unable to retain food his insulin dosage was reduced and he sometimes required orange juice to counteract insulin reaction. Otherwise, insulin requirement was usually about the same as before the operations. The systolic blood pressure was 96 mm., diastolic 84 mm. The costolumbar pressure index was ++ on the left side and — on the right. He had lost weight and although at times he felt much better he was progressively experiencing increasing severity and frequency of the more distressing symptoms, viz., asthenia and gastro-intestinal disturbances.

In addition to measures previously followed administration of adrenal cortex extract (interrenalin)<sup>1</sup> was begun and the fol-

lowing treatment advised: Intravenous saline-dextrose solution in case of acute manifestations, increase of water intake favoring the eliminative functions and prolonged, absolute rest.

The patient was in a subacute state of Addison's disease (complicating diabetes). The prognosis was extremely unfavorable. Survival for more than about six months was very doubtful unless regeneration of adrenal cortex would exceed the rate of degeneration. This was not probable in so advanced a condition as the case presented.

His progress was indicated by the following abstracts of communications received from the attending physician and from the patient and by notes on subsequent examinations of the patient.

May 24, 1935, he had another acute crisis, with vomiting, low blood pressure, and the like, which responded readily to intravenous saline solution, and he was able to return home from the hospital in a few days. May 29, the fasting blood sugar was 400 mg. per hundred cubic centimeters. June 6 it was recorded that the blood sugar went to 560 mg. one morning recently. Added a midnight dose of 5 units of insulin. June 11 he was feeling stronger, eating better, was retaining food, and the appetite had improved. There was less frequent nausea and he had not vomited for some time. The color appeared lighter, but the ebony spots were prominent. There was some gain in weight. The blood pressure was 108-110/86-88. The costolumbar pressure index was + on the right, ++ on the left. Improvement appeared to be chiefly subjective. July 3 he had gained about 4 pounds (1.8 Kg.) he felt stronger, was eating very well and indulging more in moderate physical effort, the costolumbar index was ± on the right, + on the left. July 15 it was noted that within the past week there had been some nausea and anorexia, he fatigued more easily. July 21 the appetite was returning and he was again feeling somewhat stronger. July 29 the costolumbar index was — on the right, + on the left, the blood pressure was 98-102/84-86.

During August and September he continued in about the same condition, resting most of the time and occasionally experiencing mild symptoms followed by improvement. October 5 the blood pressure was 94 systolic, 80 diastolic, the costolumbar pressure index was + on the right, ++ on the left. He had been having considerable nausea and vomiting recently. He had a severe reaction following a very small dose of insulin (3 units), four glasses of orange juice failed to yield improvement, marked hypoglycemia developed and he was comatose for some hours. Evidently he had aggravated an acute exacerbation of adrenal insufficiency by exaggerating the existing hypoglycemia with the action of insulin. Increased sugar intake and reduced insulin was advised until a higher blood sugar level was maintained. His condition apparently was becoming less favorable. Asthenia was more pronounced. He continued to take salt and sodium bicarbonate. October 13 the patient was seen in the hospital, his condition appeared grave. There was profound asthenia, with persistent nausea and vomiting. The lips were dry. Dehydration was evident and he did not respond to the administration of saline-dextrose solution (intravenous and constant rectal routes). Acetonuria was present. The blood pressure was 88 systolic, 76 diastolic. The costolumbar index was — on the right, ± on the left. The patient was apathetic and somnolent, and obviously in a critical state. Glycemia was low. The intermitting of insulin and increased water and carbohydrate intake (saline-dextrose or levulose) were advised. Recovery from this exacerbation was very doubtful and he died October 18. Autopsy was not permitted.

#### COMMENT

The case presents all the characteristics of Addison's disease. The history indicates that this syndrome was superimposed on preexisting diabetes by surgical intervention with the adrenal glands. The surgical manipulations apparently resulted in occlusion of blood vessels and degeneration of the adrenal cortex. Such degeneration has been demonstrated to occur, experimentally, when the adrenal blood supply is interfered with. Animals subjected to operations creating serious or circulatory disturbances develop acute, subacute or chronic adrenal cortical insufficiency comparable or identical

<sup>1</sup> Rogoff J. M. Clinical and Experimental Studies on Adrenal Insufficiency and Addison's Disease and the Treatment of Such Conditions by Interrenalin. *Proc. California Acad. Med.* 1930. *Diagnosis and Treatment of Addison's Disease*, *Canad. M. A. J.* 24: 43 (Jan.) 1931; *Addison's Disease. Further Report on Treatment with 'Interrenalin' (Adrenal Cortical Extract)*. *J. A. M. A.* 98: 1309 (Oct. 15) 1932.

with Addison's disease.<sup>2</sup> Of course the coexistence of diabetes may be assumed to have been unfavorable for possible regeneration of the damaged adrenal cortex.

The patient was in a subacute condition of adrenal cortical insufficiency when seen May 12. At that time it appeared that he would survive probably not more than about six months. This prognosis was based on the existing evidence of advanced adrenal cortical insufficiency, indicating extensive and progressive degeneration of the glands. The development of ebony colored mottled spots in a patient with Addison's disease is associated with irreparable damage to the cortex of the adrenals, and an inevitably fatal outcome may be expected to occur approximately six to eight months from the time of their appearance. For this reason it was doubtful whether sustained benefit would be derived from administration of adrenal cortex extract or, indeed, from any other known treatment, especially in a case associated with diabetes.

The gravity of the condition was indicated further by the repeated exacerbations and by evidence of progressive adrenal degeneration as interpreted from the costolumbar pressure reaction, which I have suggested is a significant symptom.<sup>1</sup> The presence of this sign in Addison's disease may be interpreted as evidence of active inflammatory or degenerative processes in the gland. Cessation of these processes is followed by disappearance of the symptom, and its reappearance indicates renewal of the process. If after having been observed repeatedly the sign finally disappears, as it does often in the late stage of the disease, it has been found generally that the gland has practically entirely degenerated or fibrosis has terminated the process.

This case illustrates the serious danger of attempting adrenal surgery for the correction of various ailments supposedly related with disturbed adrenal function. Such supposed relations are entirely hypothetical and are not supported by tenable evidence. At any rate the surgical procedures that have been employed should not be expected to be of permanent benefit, since denervation of the gland by section of its nerves is usually followed by regeneration of the nerve supply within a few weeks. Excision of one gland, as has sometimes been attempted, is subject to the same criticism, for it is well known that compensatory hypertrophy and hyperplasia or functional compensation commonly occurs in a remaining organ when its mate has been removed from the body.

The course and outcome in this case strongly support the contention, repeatedly made by me since 1918 that surgical intervention with the adrenals for various conditions (Raynaud's disease, spontaneous gangrene, hypertension, epilepsy, gastric ulcer, thyroid disease, diabetes, and the like) is to be deprecated. The very fact that it is alleged to be of benefit in so great a variety of diseases ought to render the practice suspect.

<sup>2</sup> Rogoff, J. M. Experimental Production of Chronic and Subacute Adrenal Insufficiency in Dogs and Cats. *Proc. Soc. Exper. Biol. & Med.* 20: 1240 (June) 1932.

**Psychologic Concepts**—However much we may argue that psychology is a science in its own right and may use its own language, the very fact that human creatures even on the very slenderest evolutionary hypothesis cannot be alienated from their animal relatives and ancestors makes it obligatory to fashion our psychological concepts so that they shall be in accordance with basic biological principles. This is surely the case with the Freudian psychology which rightly claims to be a genetic psychology rooted in the instinctual life.—Miller Emanuel. *The Present Discontents in Psychopathology*. *Lancet* 1: 245 (Feb. 2) 1935.

## DISAPPOINTING RESULTS FROM THE IONIZATION TREATMENT FOR HAY FEVER

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The recent widespread interest in ionization in the treatment of hay fever may in part be explained by the number of favorable reports that have appeared in some medical journals during the past few years. This is particularly true of the extremely encouraging results reported by Warwick,<sup>1</sup> who employed a solution containing zinc, stannous sulfate and cadmium sulfate.

In compliance with numerous requests from physicians interested in this work, my associates and I at the Department of Immunology of the French Hospital undertook to study a series of cases, using the technic recommended by Dr. Warwick. It was our desire to give the treatment a fair, impartial trial. Our disappointment with the results obtained, and our disagreement with views expressed by others, make it necessary to record this report. In a recent article Dr. Warwick states that, covering a period of seven years, he has found intranasal ionization, using his special solution the most satisfactory method of desensitizing to foods as well as to pollen, he asserts that the reactions are not only local but also systemic.

However, Haseltine<sup>2</sup> says "For the treatment of nasal irritations arising from intrinsic causes it has probably no value" (This refers to intranasal ionization in general not specifically to the Warwick method.) "It is not a treatment for the basic systemic disturbance underlying the hay fever-asthma syndrome, therefore to recommend it as a treatment for allergy or to imply that it can modify the underlying constitutional state is misleading."

Our series consisted of seventy-five cases. Of these fifty were true (seasonal) pollen cases, so-called hay fever, and twenty-five were cases of nonspecific perennial vasomotor rhinitis that did not give a positive skin reaction to allergens ordinarily used in testing.

In the group of nonspecific perennial vasomotor rhinitis, twenty-five cases, we feel that there was evidence of benefit and that the vast majority were improved.

In the hay fever series (seasonal pollinosis), fifty cases, the treatment was a complete failure in every case. In group 1, patients were given the Warwick ionization treatment before the expected date of pollination. One week later they were tested by permitting inhalation through the nose of a very small amount of pollen to which a positive skin test had previously been obtained. All had severe symptoms of hay fever immediately.

In group 2, ionization treatment was given as in group 1 before the date of pollination, but the inhalation test was performed two weeks later. All had severe symptoms immediately.

In group 3, ionization treatment was given as in groups 1 and 2 before the expected date of pollination (four weeks before) but instead of testing them by inhalation of pollen we allowed them to go without

<sup>1</sup> Warwick, H. L. Treatment of Hay Fever and Its Allied Conditions by Ionization. Preliminary Report. *Laryngoscope* 44: 173-181 (March) 1934. Desensitization of Nasal Mucous Membranes for Relief of Hay Fever, Asthma and Food Allergy. *Texas State J. Med.* 30: 210-215 (July) 1934.

<sup>2</sup> Haseltine, Burton. Ionization in the Treatment of Nasal Hyperesthesia. *Eve. Ear, Nose & Throat Month.* 13: 257-261 (Aug.) 1934.

further treatment in order to observe whether or not they would have symptoms as in previous years when pollen appeared in the air. Every case showed symptoms of hay fever as soon as the season started identically as in previous years when no treatment had been given.

In group 4 the patients were treated by the Warwick ionization method during the season while they were suffering with acute symptoms. In no case was there any relief.

Passive transfer tests performed with the serum of several of the hay fever patients showed no variation whatever following ionization treatment.

#### CONCLUSIONS

1 In my opinion the intranasal ionization treatment for hay fever has no merit.

2 Intranasal ionization is of benefit in the treatment of nonspecific perennial vasomotor rhinitis.

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### TRAUMATIC FLAIL ELBOW

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In a review of the literature<sup>1</sup> of elbow injuries, one is impressed by the comparative rarity of flail elbows. Most of those presented have been the result of gunshot injuries.

The classification as well as the treatment of this condition depends to a large extent on whether the disability is due to (1) a loss of bone forming the joint with good practical muscle and nerve control, i. e., an active flail joint, or to (2) loss of bone with loss of practical muscle and nerve control, i. e., a passive flail joint.

The absence of bone in the elbow region may have been the result of gunshot injuries or any traumatism or resections for tumors or disease, or as the result following attempts at arthroplasty. The bone may have been removed from (1) the lower end of the humerus, (2) the upper end of the ulna alone or with the radius, or (3) any combination of these.

The passive flail joint is best remedied by fusion in the optimal position obtained by different methods, depending on where and to what extent the bone loss has taken place, following the principles of bone growth as outlined by Leriche and others. Pronation and supination should be maintained when only the lower end of the humerus is absent and restoring this movement, which is usually lost when the upper end of the ulna and radius has been damaged.

The active flail joint, i. e., when one has to contend only with loss of bone as the cause of lack of stability, particularly lateral stability, can best be improved by restoring the normal shape and size to the bone ends in order to give better contact for resistive pressure during active movement as well as places for attachments of muscles that will approach or even improve on their normal leverage action. In flail elbows in which the olecranon process has disappeared, Dr. Albee slides a graft up from the ulna, reforming this process

and giving an insertion for the triceps muscle, which can again have its normal action as an extensor of the elbow. This has been a great advance and to a marked degree has solved the problem of active flail elbows.

It has been stated that bones are useful in the measure in which they separate the origin of muscles from their insertions. In flail elbows the bones do not perform this service adequately. They slide by one another or override, owing to their altered shape and diminished size. In order to give a broad, firm joint surface of contact for resistive purposes and insuring lateral stability, both of which are lacking because of the narrowed and pointed lower end of the humerus, a very simple procedure has been successful, which will be described along with the case report and as far as I know is original with me.

#### REPORT OF CASE

A man at the age of 29 years sustained a compound infected fracture of the left elbow in an automobile collision. At the time of the accident, or following it,  $2\frac{1}{2}$  inches of the lower end of the humerus was removed, also the olecranon process of the ulna. On my first examination, one month after the accident, the elbow was swollen and discharging pus. The end of the humerus was square but later became pointed (fig. 1). The Orr method of antiseptic rest in a cast from the palm to the axilla was used and the wound was healed in four months, but the elbow remained flail and useless. The muscles and nerves were intact (active flail elbow).

June 19, 1934, four years from the date of the accident, the left elbow was operated on. Through a midline posterior vertical incision, the ulna nerve was dissected free from the scar tissue and placed to the inner side. The triceps was freed from its attachment to the fibrous tissue covering the lower end of the humerus. The lower end of the humerus was sawed off square (fig. 2A) and then with a chisel the lower end of

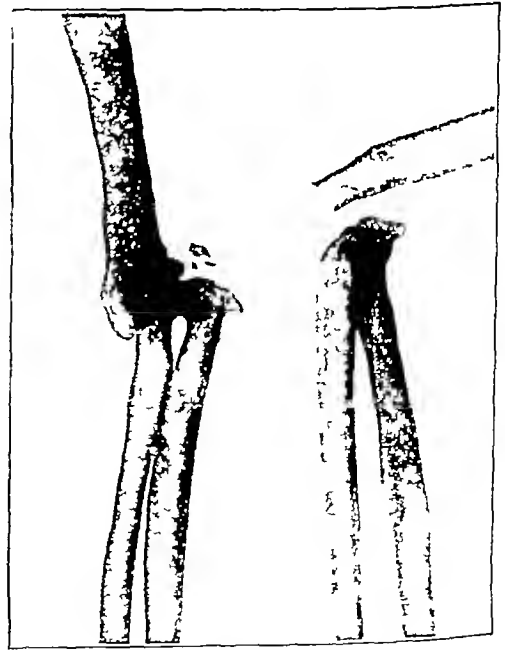


Fig. 1—Flail elbow before operation.

the shaft was split vertically into lateral halves and forced apart. The free piece of bone, which was previously the widened lower extremity, was placed in the crevice, which was widened sufficiently to give a width to the lower end of the humerus equal to the normal (fig. 2B). The next step was placing drill holes in the upper end of the ulna, as well as drill holes along the sides of the ulna in its upper third, extending to the medullary cavity. With a chisel, a sliding graft (as described by Dr. Albee) was made, bordered on each side by

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N. J. von Dittich, Klaus, Deutsche Ztschr. f. Chir. 164:315 (July) 1921.  
Massart, R., Lyon chir. 16:207-224 (March-April) 1919.  
Ryerson E. W., S. Clinics (Chicago) 3:841-844 (Aug.) 1919.  
Platt, H. J., Orthop. Surg. 1:667-672 (Nov.) 1919.  
Stoney, R. A., Dublin J. M. Sc. October 1920, pp. 267-374.

the two rows of drill holes Beginning below about the middle of the ulna, it was pushed upward and behind the now broadened end of the humerus and was held in its bed by kangaroo tendon sutures, passed through the lateral rows of drill holes (fig 2C) The triceps was now attached to the upper end of the graft and the skin closed with silkworm gut (fig 2D) A cast was applied from the palm to the axilla with the elbow at an angle of 145 degrees This cast was changed and the stitches were removed in four weeks A second cast was

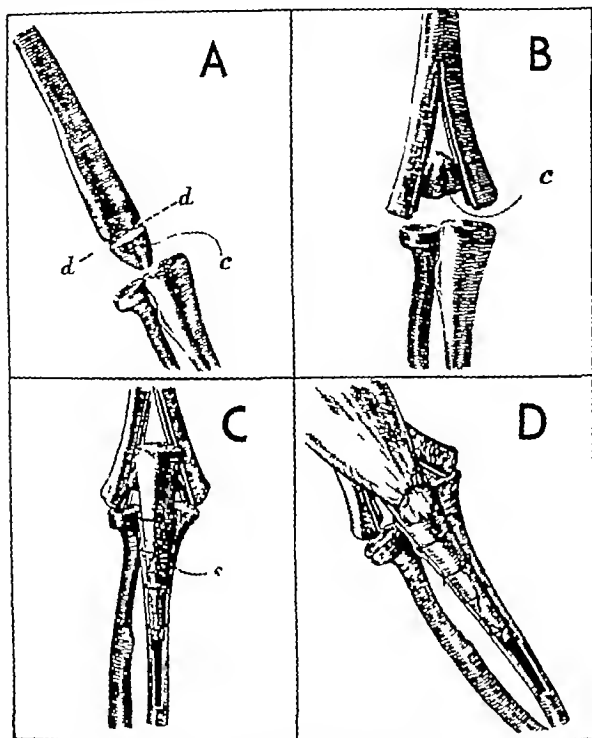


Fig 2—A lower end of humerus sawed off square at line d-d B loose piece of bone in crevice to maintain width C sliding graft pushed upward from ulna to reform olecranon process D triceps attached to ulna graft

applied with the elbow at an angle of 100 degrees and worn for four weeks longer The patient was then allowed to use the joint The elbow has remained stable and painless since, and the range of active motion is between an angle of 85 and 175 degrees and is slowly increasing

At examination, one year after the operation, the flexor and extensor muscles were able to function normally and the patient could perform the usual movements with ease and perfect coordination He is able to lift a load and control it, during the different movements, practically as well as before the accident

#### CONCLUSION

It is of interest to note that (1) only local bone was used and (2) the ends of the bones were not covered by fascial flap or transplant

#### ABSTRACT OF DISCUSSION

DR EDWIN W RYERSON, Chicago This is one of the best results that I have ever seen in this kind of an injury At Fort Sheridan, after the war we had a number of flail elbow cases exactly resembling this one, and in all the lower end of the humerus had become pointed. No possible solution except such a solution as Dr Murray has described is adequate if one wants to preserve a movable elbow joint The question then always arises as to whether by some ingenious carpentry work, such as Dr Murray has done in this case a better result can be obtained by simple fusion of the elbow joint Dr Murray made no mention of inserting any lateral ligaments and this elbow joint functions so extremely well that it is evident that there is no need to manufacture new lateral ligaments I

don't recall any procedure in which the splitting operation of the lower end of the humerus was done in the way Dr Murray has performed it, and the result speaks for itself The preternatural movement or mobility of these elbows is the remarkable feature of them I have had several patients who could twist up the elbow joint two or three times One of them could make four twists The other feature is that almost all these elbows are painless, and many of the patients seem to prefer the wearing of an apparatus, a laced leather splint above and below the elbow joint, with a hinge at the elbow Many of them who do not desire operation or in whom it is undesirable get along really quite well, and, as Dr Murray indicated, many such patients are willing to go through life with an ankylosed elbow But such a procedure as Dr Murray's is an inspiration to keep on trying to preserve movable elbows The procedure, which was original with Dr Albee, of sliding a graft upward from the ulna, deserves credit When it is a little longer than Dr Murray made it in this case, it provides fine leverage and makes powerful extensor action in the elbow

DR GEORGE I BAUMAN, Cleveland A flail elbow results usually from the removal of an excessive amount of bone in an arthroplasty operation In the experience of some operators this obtains so frequently as to cast the operation into undeserved disrepute, undeserved because most of us, I think, are more apt to obtain insufficient rather than excessive mobility after an arthroplasty operation Three methods are available for the treatment of a flail elbow (1) an arthrodesis of the humerus and ulna, (2) tying these two bones together by fascia or tendon and (3) lengthening or altering the shape of the bones so as to bring them into contact Owing to the lack of contact between the humerus and the ulna, the muscles about the elbow attempt to operate under a distinct mechanical disadvantage As a result of an ingenious method of altering the shape of the distal end of the humerus and of lengthening the ulna, Dr Murray's patient obtained active motion of from 85 to 175 degrees Other operators have reported an increase in stability after tying the ulna and the humerus together with autogenous fascia grafts If it should be necessary to alter Dr Murray's excellent technic to fit the requirements of some other case, the possibility of inserting a section of radius into the ulna or of adding it on to the ulna should be considered The tendon of the palmaris longus in the same arm could be cut at its insertion, reversed, and used to tie together the ends of the humerus and ulna reshaped by Murray's method.

DR J M MURRAY, Ottawa When I was a student in the Montreal General Hospital, Dr George Armstrong, then professor of clinical surgery at McGill, presented a case of flail

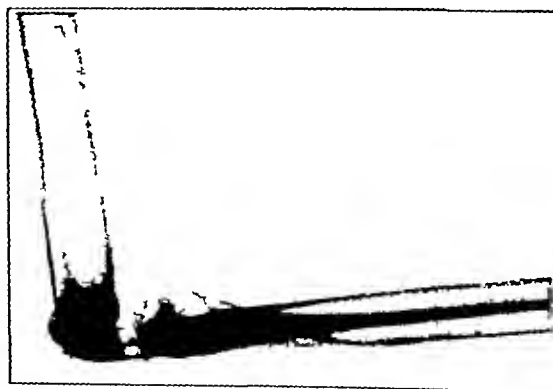


Fig 3—Appearance of elbow after operation

elbow which he was able to improve by transplanting the metacarpophalangeal joint of the little finger to the elbow The metacarpal was inserted into the humerus and the phalanx into the ulna cross pegs being used to prevent rotation About this time Professor Erich Lexer of Freiburg was doing work on transplantation of complete joints This particular man was able to carry on as a painter I don't think that Dr Armstrong ever reported this case and I could not obtain any records of it in the Montreal General Hospital



# TETANY IN AN ASTHMATIC PATIENT FOLLOWING THE ADMINISTRATION OF EPINEPHRINE

READ ELLSWORTH, MD

AND

WILLIAM B SHERMAN MD

BALTIMORE

The occurrence of tetany under circumstances similar to those found in the present case has not been noted in this clinic before, and we cannot find in the literature any description of such a case. Considering the frequency of the underlying condition, asthma, it is possible that the situation described herein may occur unobserved. In order to call attention to the occurrence of tetany following the injection of epinephrine in an asthmatic patient, the present case is reported.

## REPORT OF CASE

B F, an unmarried white houseworker, was first seen in the dispensary April 28, 1931, complaining of nasal obstruction. She was then 41 years old. There was no family history of allergic diseases. Her past health had been good except for diphtheria as a child and rheumatism at the age of 30 years. For five years before coming to the hospital she had sneezing attacks, a profuse watery nasal discharge and intermittent obstruction of the nares. There was no seasonal variation in the symptoms. Two years before she was seen at the clinic she began to cough, chiefly at night and developed attacks of asthmatic wheezing. This was not noticeably related to contact with any food, drug, flower, animal or cosmetic.

The patient was small and well nourished, and was not apparently ill. The nostrils were almost completely closed by polyps and the turbinates were enlarged. There was a small amount of adenoid tissue. The tonsils were not enlarged. The frontal sinuses transilluminated clearly, but the antrums were dark. The lungs were resonant and the breath sounds vesicular with a few wheezing rales. The heart was not enlarged. The sounds were regular and clear, with no murmurs. The radial arteries were slightly thickened. The blood pressure was 210 systolic, 110 diastolic.

The blood Wassermann reaction was negative. The urine contained a trace of albumin and a few casts. The skin tests with pollens and inhalants were negative except for a mild reaction to orris root and mixed feathers.

During the next three years she had repeated operations for nasal polyps and sinusitis. Most of these were followed by relief of the nasal obstruction and the asthma for a period of one to two months, then a recurrence of all the symptoms took place, but they were always relieved by epinephrine.

After a radical opening of the ethmoid and sphenoid sinuses in November 1934 she noticed that the administration of epinephrine during the asthmatic attacks was followed by spasms of the hands and forearms with a sense of numbness and tingling in the extremities. The asthma was promptly relieved by epinephrine. Because of the unpleasant sensations it produced she began to avoid the use of epinephrine despite the fact that she had moderately severe attacks of wheezing almost every night. March 25, 1935 she was readmitted to the hospital for the treatment of sinusitis.

The physical examination then showed but little change from that previously described. The blood pressure was 196 systolic, 110 diastolic. The heart was not enlarged. The sounds were slow, regular and of good quality. No murmurs were heard. The blood count gave hemoglobin 112 per cent, red cells 5,700,000, white cells 9,300. The differential count was 70 per cent neutrophils, 5 per cent eosinophils, 22 per cent lymphocytes and 2 per cent monocytes. The urine showed a trace of albumin and occasional casts. The blood Wassermann reaction was negative. The nonprotein nitrogen of the blood was 30 mg per hundred cubic centimeters. The phenolsulfonphthalein test showed 87 per cent excretion in two hours.

March 25 the nasal septum was partially resected, and on March 30 a bilateral radical drainage of the antrums was done.

She made a good recovery and during her stay in the ward had only four mild asthmatic attacks.

During the first of these attacks she was given 0.1 cc. of epinephrine solution by hypodermic injection. The asthmatic symptoms were relieved promptly, but with the relief of the asthma she developed obvious active tetany with typical carpal spasm. This attack of tetany lasted only a few minutes. Venous blood taken at that time (near the end of the attack) and prevented from clotting by heparin showed a carbon dioxide combining power (van Slyke and Cullen) of 80 volumes per cent, chlorides (plasma), 102.1 milliequivalents per liter of plasma, sodium (plasma), 144 milliequivalents per liter of plasma, calcium, 10 mg per hundred cubic centimeters phosphorus, 27 mg per hundred cubic centimeters.

During the three days following this attack the Chvostek sign was negative. No Trousseau sign could be elicited.

Three days after the first attack of asthma in the ward a second one began. The respiratory rate was somewhat rapid. Auscultation revealed numerous musical wheezes in the chest. She was not markedly cyanotic, but her distress was apparent. There was no spasm of the extremities, but a pressure cuff elicited a Trousseau sign in sixty seconds. She was in a state of latent tetany. Arterial blood collected anaerobically showed a carbon dioxide content of 68 volumes per cent, 27.9 milliequivalents per liter of plasma, chlorides (plasma), 102.1 milliequivalents per liter of plasma, sodium (plasma) 139 milliequivalents per liter of plasma, phosphorus, 27 mg per hundred cubic centimeters.

The patient was given 0.2 cc. of epinephrine solution. There was prompt relief of her respiratory distress, but with the relief the typical carpal spasm of active tetany again appeared. Examination of the arterial blood obtained at this time (during the active tetany) gave approximately the same results as those of the blood collected during the latent tetany except for the usual decrease in inorganic phosphorus that follows epinephrine: carbon dioxide content 67 volumes per cent, 27.8 milliequivalents per liter of plasma, chloride (plasma), 101.6 milliequivalents per liter of plasma, sodium (plasma) 140.1 milliequivalents per liter of plasma, phosphorus, 16 mg per hundred cubic centimeters.

The active tetany lasted about fifteen minutes and then disappeared. During the next attack some days later, she was found to have a positive Trousseau sign. She was given on this occasion 64 mg of codeine instead of epinephrine. The asthmatic attack subsided without the appearance of active tetany. One further mild attack occurred two weeks after the second sinus operation. No blood analyses were made at that time. We wished to ascertain whether a demonstrable alkalosis developed during the attack and after the administration of epinephrine but no further attacks have occurred.

## COMMENT

In view of the history and observations it seemed reasonably certain that the underlying condition was a chronic infection of the upper respiratory tract with bronchial asthma. The appearance of the very unusual complication, tetany, however, arrested our attention and merits some discussion. Tetany in general may be divided into two types.

(a) Forms that are associated with a lowering of the blood calcium, a relationship first demonstrated by MacCallum.<sup>1</sup> This form of tetany is brought about only by a decrease in the fraction of the blood calcium that is physiologically active and not by a lowering of the fraction bound to protein. The first group of cases of tetany include

- 1 Hypoparathyroidism, idiopathic or postoperative.
- 2 Infantile tetany associated with rickets.
- 3 Tetany occurring with osteomalacia.
- 4 Tetany of pregnancy.

Infantile tetany, tetany associated with osteomalacia, and tetany of pregnancy may result from deficient vitamin D in the diet, or deficient intake of calcium or excessive loss of this ion.

- 5 Tetany in the uremic stage of chronic nephritis.

<sup>1</sup> MacCallum W G and Voegtlin Carl. Bull Johns Hopkins Hosp 10 91 1908.

In the patient with chronic nephritis the total calcium is often low. This is usually due to a decrease in the calcium-protein fraction caused by a decrease in plasma protein. However, with the high phosphate in the blood the active fraction of calcium may also be decreased sufficiently to cause tetany. The presence of a slight acidosis in nephritis undoubtedly lessens the incidence of tetany. Occasionally the injection of bicarbonate in nephritis produces an alkalosis and tetany results.

(b) In a second large group, those forms of tetany in which the blood calcium is normal but in which other blood electrolytes are disturbed. In all these there is either a decrease of carbon dioxide tension or an increase of bicarbonate and an alkalosis is present. These cases include

- 1 Hyperventilation (decrease of carbon dioxide tension)
- 2 Gastric tetany (loss of hydrochloric acid compensation of chloride loss by increase of bicarbonate)
- 3 Injection of sodium bicarbonate
- 4 Injection of alkaline phosphate (There may in this case be a lowering of blood calcium in addition)

Although some authors have considered that alkalosis is essential to parathyroid tetany, it now seems probable that this is not the case. Careful observations by accurate methods have demonstrated that tetany may occur in the parathyroidectomized animal without alkalosis and solely as a result of the low calcium.

On the other hand, the occurrence of tetany in the second group (in which total blood calcium is normal) has been explained by the influence of the alkalosis on the activity of that fraction of the serum calcium which is physiologically active.

Rona and Takahashi's formula<sup>2</sup> relating the calcium ions to  $p_H$  and bicarbonate is well known

$$Ca^{++} = \frac{Ks \cdot f}{K} \times \frac{(H^+)}{(HCO_3^-)}$$

The objections to the application of this formula, with a clear discussion of the subject, has been supplied by Peters and van Slyke.<sup>3</sup> From the work of Grant and Goldman<sup>4</sup> and that of Gunther and Greenberg,<sup>5</sup> confirmed by McLean and Hastings,<sup>6</sup> one would conclude that alkalosis alone without alteration of the physiologically active fraction of the blood calcium may produce tetany.

The normal blood calcium places the present patient definitely in the second group of tetany, that associated with alkalosis. Our problem is therefore to offer an explanation for the alkalosis and thus for the development of latent and finally active tetany. Vomiting and alkaline injections can be excluded in this case as a cause of latent tetany. Hyperventilation seems to be left as the logical explanation. The sodium of the plasma was normal. The chloride of the plasma was at the lower limit of normal, and from the carbon dioxide content it is probable that the bicarbonate was at the upper limit of normal. In these respects the blood chemical observations were similar to those found after vomiting and before gastric tetany appears. They are also representative of the blood chemistry pattern encountered in many cases of emphysema.

The lungs of the patient under discussion were not definitely emphysematous. However, with low plasma

chloride and high bicarbonate, slight lowering of the carbon dioxide tension by mild hyperventilation would produce a slight alkalosis. Early in the attack before the bronchial spasm could prevent it she did seem to succeed in hyperventilating slightly. Certainly latent tetany appeared. With regard to the active tetany the mechanism seemed much clearer. The failure of active tetany to appear when she was given codeine instead of epinephrine, and the prompt appearance of active tetany following the relief of the bronchial spasm by epinephrine both suggested very strongly that hyperventilation was made possible by the epinephrine and that this was responsible for the active tetany.

The presence of latent tetany, demonstrated in this case in association with asthma, serves as a warning. Laryngeal spasm, the most dangerous of the symptoms of tetany, might easily be overlooked during an asthmatic attack. Latent tetany should be tested for during asthmatic attacks, particularly as epinephrine, so useful in relieving the asthma, was found in the present case to precipitate active tetany. If laryngeal spasm did occur it would tend to appear with the active tetany, i. e., after the relief of the bronchial spasm had permitted hyperventilation. Laryngeal spasm might easily be regarded merely as a residual of the asthmatic attack, and death of the patient occur as a result of this misconception.

## Clinical Notes, Suggestions and New Instruments

### A NEW METHOD AND END RESULTS IN THE TREATMENT OF CARCINOMA OF THE STOMACH AND RECTUM BY SURGICAL DIATHERMY (ELECTRICAL COAGULATION)

ALFRED A. STRAUSS, M.D., Chicago

In previous publications my associates and I have reported the effect of surgical diathermy in coagulation of the rectum. Forty-two cases have been treated by this method in eight and one-half years. Two deaths resulted immediately from the surgical diathermy. Since that time we have added thirty-one cases with only one death.

These results have led us to attempt similar experiments in other parts of the intestinal tract, including particularly inoper-

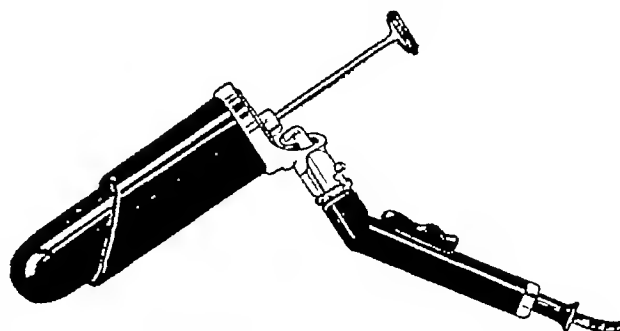


Fig. 1—Specially constructed gastroscope for surgical diathermy of the stomach and rectum.

able carcinoma of the stomach. The cases were inoperable and of the type in which x-rays and radium have no effect.

We have treated two cases of carcinoma at the lower end of the esophagus, two cases of carcinoma of the cardiac end of the stomach and two of the lesser curvature.

A midline incision was made through the abdominal wall on the ensiform cartilage to within one inch of the umbilicus, and the stomach was exposed. A Witzel jejunostomy was made

<sup>2</sup> Rona P. and Takahashi D. *Biochem. Ztschr.* 49: 370, 1913.  
<sup>3</sup> Peters J. P. and van Slyke D. D. *Quantitative Clinical Chemistry*. Interpretations chapter on calcium.  
<sup>4</sup> Grant S. B., and Goldman A. *Am. J. Physiol.* 52: 209 (June) 1919.  
<sup>5</sup> Gunther Lewis and Greenberg D. M. *The Diffusible Calcium of the Blood Stream in Tetany*. *Arch. Int. Med.* 47: 660 (April) 1931.  
<sup>6</sup> McLean F. C., and Hastings A. B. *J. Biol. Chem.* 108: 306 (Jan.) 1935. *Am. J. Sci.* 189: 601 (May) 1935.

for the purpose of feeding the patient. The anterior wall of the stomach was sutured to the skin (not the abdominal wall) with interrupted silk sutures. The anterior wall of the stomach was opened for about  $3\frac{1}{2}$  inches midway between the lesser and greater curvatures. The specially constructed gastroscope (fig 1) is then inserted and the tumor coagulated.

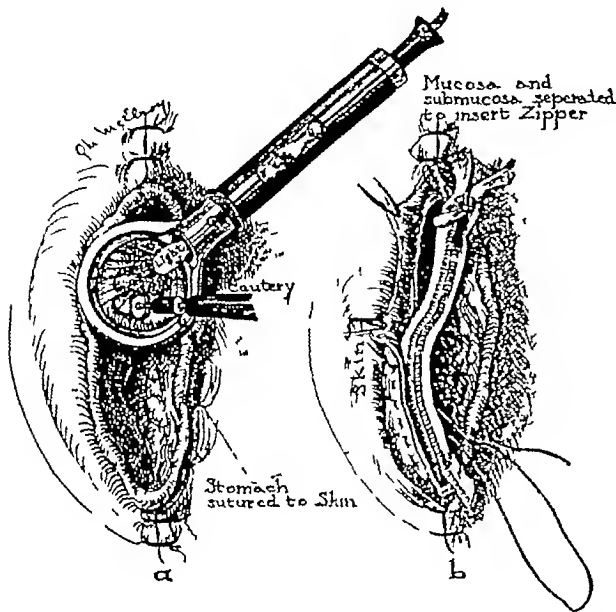


Fig 2—*a* gastroscope in the cavity of the stomach for diathermy *b* suturing of ribbon end of slide fastener in between the mucosa and muscularis of stomach

On account of the spilling of gastric juices from the open stomach attached to the skin, which was annoying to the patient, and because of loss of chlorides and gastric juices and on account of the inability of the patient to eat except through the artificially fed jejunostomy, we attempted to close the stomach by an ordinary slide fastener.

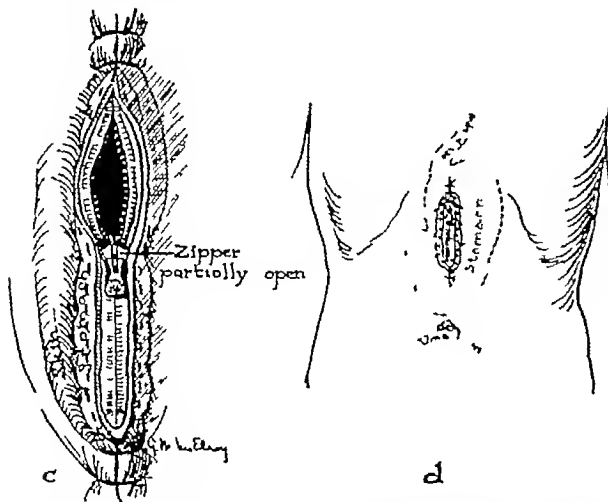


Fig 3—*c* slide fastener completely sutured into the stomach wall and partially opened *d* slide fastener closed and showing its relationship to the stomach as a whole

The muscularis and the mucosa were separated and the ribbon portion of the slide fastener sutured into the wall of the stomach (figs 2 and 3). This permitted us to open and close the stomach at will, prevented the spilling of gastric juices, and permitted the patient to eat. After the diathermies are completed, the stomach is closed permanently in the usual manner. The value of the method is not yet, of course, determined.

104 South Michigan Avenue.

## FATAL INHALATION OF A DRY CLEANING FLUID

THOMAS A. GONZALES, M.D., NEW YORK

Two editorials<sup>1</sup> in THE JOURNAL prompted the report of the following case.

G. P., a housemaid, aged 40, contrary to directions on the gallon container of "Quick as a Wink" cleaning fluid, poured almost the entire contents in a basin and dipped the garments in the liquid. She immediately became dizzy and faint, staggered out of the small room in which the operations were performed and collapsed. A physician after reviving her expressed the opinion that she had suffered a "heart attack."

A few days thereafter, at the behest of her mistress, she proceeded to clean dresses in a similar manner and was found dead beside the basin containing the fluid.

The necropsy was negative except for a moderate grade of chronic diffuse nephritis, pial edema and injection of the laryngeal and bronchial mucosa.

A chemical examination of the organs by Dr. A. O. Gettler revealed the presence of carbon tetrachloride and dichloropropane. The analysis showed 18 mg. in 500 Gm. of brain, 26.5 mg. in 500 Gm. of lung and 14.5 Gm. in 500 Gm. of liver, of chlorinated hydrocarbons of low boiling point.

The amounts were too small to isolate the substances in pure form. These results were determined colorimetrically.

Analysis of the colorless fluid remaining in the container indicated approximately 60 per cent carbon tetrachloride and 40 per cent dichloropropane.

Municipal Building

## Special Article

### THE LYMPHOMATOID DISEASES

(THE SO-CALLED LYMPHOBLASTOMAS)

E. B. KRUMBHAAR, M.D., PH.D.

PHILADELPHIA

The recognition of a number of obscurely caused disorders of the lymphatic and hematopoietic systems, mostly associated with blood changes and tissue enlargements, has now been making progress for over a century—ever since Hodgkin's original description in 1832. Nevertheless, though morphologically these conditions have been closely studied, the advances in our knowledge of their nature have not yet reached the stage that permits simplification of classification. Each new observation, then, adds to the burden of those who wish to keep abreast of the tide and are unwilling to accept an easy, premature and unwarranted classification. Furthermore, the problem is made especially difficult for the diagnostician because, though the typical forms are distinct, in no group of diseases are there so many variations of individual cases with overlapping into another category and perhaps even transition from one disease to another.

With the inauguration of modern hematology by Virchow and Ehrlich, sound criteria were accumulated for the segregation of typical cases of the various leukemias, the picture of lymphosarcoma was definitely outlined by Kundrat in 1893, while for Hodgkin's disease the establishment of a special pathologic histology by Sternberg and Reed about the turn of the century gave an adequate diagnostic basis for most cases of this disease, when microscopic tissue examination was

From the Office of the Chief Medical Examiner.

<sup>1</sup> Volatile Poisons in the American Home editorial, J. A. M. A. 101:1238 (Oct. 14) 1933. The Hazards of Dry Cleaning editorial, *ibid.* 101:1970 (Dec. 16) 1933.

From the Department of Pathology, University of Pennsylvania School of Medicine.

Read before the General Scientific Meeting at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 10, 1935.

possible. A number of other more or less obscure conditions, such as pseudoleukemia leukosarcoma, granuloma fungoides, Mikulicz's syndrome the chloromas, and more recently the reticuloses and giant lymph follicle hyperplasia, present either such obvious relationships to the group or such difficulties of differential diagnosis that they may well be grouped together under one heading.

The term of my bracketed title, "lymphoblastoma" was first used by Mallory<sup>1</sup> in his textbook in 1914 to indicate a neoplasm derived from the lymphoblast. It has been gradually extended by different authors however, to include so many conditions that to avoid utter confusion each has had to begin by carefully indicating just what he means to include. This unfortunate situation is not a whit better now than it was in 1926 when Minot and Isaacs,<sup>2</sup> in one of the best clinical papers on the subject, included thirteen terms in this category (from lymphatic leukemia and lymphosarcoma to Hodgkin's disease), with Banti's disease chloroma and Mikulicz's disease as possible additions. Even this however, did not include the more recently developed reticuloses, mycosis (granuloma) fungoides and other skin diseases that have obvious connections with the group.

It should not be necessary to ask indulgence for dwelling further on nomenclature, because not only does a poor or improper terminology start the newcomer with confused notions that haunt him perhaps indefinitely, but also in the case of lymphoblastoma the inclusion under a neoplastic concept of diseases of unknown origin, which many regard as infectious, such as Hodgkin's and Banti's disease both is unscientific and tends to smother curiosity and future study. That bold warrior James Ewing,<sup>3</sup> when this matter was discussed in 1927, said "Although we may not be able to find clear differences in all cases how are we going to make progress by throwing them all into one category?" I would rather see the most minute differences emphasized and a classification based upon them until the time when the etiologic factors unify or subdivide the entire group." In this country particularly the authority of Mallory and Warthin<sup>4</sup> and their numerous pupils has led to a widespread misuse of this term. I have discussed elsewhere the pros and cons of this problem and given my preference in such cases for eponymic names that are noncommittal as to etiology, at least until a cause for the disease based on adequate evidence is forthcoming. For this rather heterogeneous group of so-called lymphoblastomas however, which have so many clinical and pathologic similarities and differences I must admit that I can think of no completely adequate retort to Ole Bill's axiom "If you know a better 'ole go to it!" The term "malignant lymphoma" a favorite with the Boston investigators who have studied these diseases so extensively, is only one step less objectionable than the other, in that it has a slightly less concrete significance. Any designation that approaches accuracy becomes an unwieldy description, not a term, so for want of a better I propose to group them under the noncommittal and relatively brief title of the 'lymphomatoid diseases'.

It should be unnecessary to add that this is intended for nosologic convenience only, and in no way to indicate genetic reactions between the diseases treated.

As a basis for this study we have analyzed the 150 cases that fall into this group in the autopsy records of the University and Philadelphia General hospitals (table 1). I would like to consider some of the interesting points that this study and the experiences of others have brought forth.

#### THE LEUKEMIAS

As we have already had more than enough of terminology, I shall omit my reasons for preferring the older established terms to the newer terms "myelosis" and "lymphadenosis." The myeloid leukemias, acute and chronic, and the rare monocytic, plasma cell and eosinophilic forms we may pass over at this point, since their problems are largely included in those of the lymphatic leukemias and since they do not offer the same diagnostic difficulties (on account of the different type of cell involved).

TABLE 1—The Lymphomatoid Diseases with the Age and Sex Distribution of 150 Cases

|                               | Cases | Ages | Years | Sex  |        |
|-------------------------------|-------|------|-------|------|--------|
|                               |       |      |       | Male | Female |
| Lymphatic leukemia            | 22    |      | 30.7  | 21   | 1      |
| Acute lymphatic leukemia      | 7     | 23.5 |       | 7    |        |
| Chronic lymphatic leukemia    | 15    | 38.4 |       | 11   | 4      |
| Atypical lymphatic leukemia   | 2     | 29.5 |       | 2    |        |
| Unknown                       | 1     | 51.0 |       | 1    |        |
| Lymphosarcoma                 | 41    |      | 43.0  | 30   | 11     |
| Retiulum cell sarcoma         | 2     |      | 39.0  | 2    |        |
| Atypical reticulosis          | 1     |      | 13.0  |      | 1      |
| Leukosarcoma                  | 3     |      | 50.0  | 3    |        |
| Hodgkin's disease             | 31    |      | 43.3  | 23   | 10     |
| Granuloma (mycosis) fungoides | 0     |      |       |      |        |
| Mikulicz's disease            | 0     |      |       |      |        |
| Diagnostically connected      |       |      |       |      |        |
| Myelogenous leukemia          | 28    |      | 44.7  | 19   | 9      |
| Acute myelogenous leukemia    | 10    | 44.1 |       | 6    | 4      |
| Chronic myelogenous leukemia  | 14    | 44.4 |       | 10   | 4      |
| Atypical myelogenous leukemia | 2     | 52.5 |       | 1    | 1      |
| Unknown                       | 2     | 49.0 |       | 2    |        |
| Monoblastic leukemia          | 0     |      |       |      |        |
| Monocytic leukemia            | 1     |      | 16.0  |      |        |
| Agranulocytosis               | 11    |      | 52.0  | 0    | 5      |
| Coley's erythroblastic anemia | 2     |      |       | 1    | 1      |
| Infectious hemolytic anemia   | 1     |      | 43.0  |      | 1      |
| Hepatic thrombosis            | 1     |      | 7.0   |      | 1      |
| Von Jaksch's disease          | 2     |      |       | 1    | 1      |

With the lymphatic leukemias, however, we run into the heart of the problem. Here we have to deal with acute and chronic and aleukemic forms, leukosarcoma with its blood picture of leukemia and tissue changes of lymphosarcoma Mikulicz's disease and leukemia cutis (to be discussed later under a separate section). Leaving the cause of lymphatic leukemia to be discussed later, we may note in our series the great preponderance of males (twenty-one of twenty-two cases), a common observation (though not usually as striking as in our cases) for which no explanation is forthcoming. The age distribution also follows the accepted scheme namely, peaks of the acute cases around 20 and 47 years (range from 2 to 54 years) and of the chronic cases at 40 years (range from 11 to 61 years). Curschmann<sup>6</sup> in his review of eighty-one cases of leukemia emphasizes the late onset in the chronic forms. Of fifty-one chronic cases thirty-four (67 per cent) began between the ages of 50 and 70, in our series 50 per cent. The tendency to the aleukemic variety was found to be most marked in his older patients. Other factors such as race occupation and season of the

1 Mallory F B Principles of Pathologic Histology Philadelphia W B Saunders Company 1914

2 Minot G R and Isaacs Raphael Lymphoblastoma (Malignant Lymphoma) Age and Sex Incidence Duration of Disease and Effect of Röntgen Ray and Radium Irradiation and Surgery J A M A 86 1185 (April 12) 1265 (April 24) 1926

3 Ewing James Am J Path 31: 551 (Sept.) 1927

4 Warthin A S The Genetic Neoplastic Relationships of Hodgkin's Disease Ann Surg 83 153 (Jan.) 1931

5 Krumbhaar F B Is Typical Hodgkin's Disease an Infection or a Neoplasm? Am J M Sc. 188 597 (Nov.) 1914

6 Curschmann H Zur Morbidität der Leukämien insbesondere auch im höheren Alter Deut che med Wchnschr 61 285 (Feb. 22) 1935

year could not be shown to play a part in our series any more than in cases to be found in the literature. The onset of the acute forms was naturally more sudden than that of the chronic. In four, definite episodes were so strikingly connected with the onset of the leukemia that they cannot be dismissed as without significance (two "colds," one convalescence from pneumonia, one injury to the back).

In the myelogenous leukemias also, definite episodes seemed to bear a striking relation to the onset. In Dr. Bauer's case<sup>7</sup> at the Pennsylvania Hospital an unemployed adult had spent the night on a park bench in the rain—a chill, pain in the head, chest and stomach, and hemoptysis, hematemesis and hematuria ushered in a fulminating acute myelosis (leukocytes changing from 2,700 to 50,200) that was fatal in a few weeks. Just as striking is Rosler's<sup>8</sup> case of typical leukemia with priapism, developing thirty-three hours after a heavy blow on the root of the penis. Craver<sup>9</sup> has also recently detailed a number of striking incidents in relation to the onset of leukemia. In three of our twenty-eight cases of myelogenous leukemia, pregnancy seems to have been the determining factor, while in three others recent respiratory infections were associated.

Unfortunately, however, such observations could fit with either an infectious or a neoplastic theory of

ture cells in the acute forms) indicate a chronic form (existing more than four months) and if found in a clinically acute case mean either that the condition was latent for a longer period or was picked up in a stage of acute exacerbation of the chronic disease.

Another detail of hematologic interest is that, for reasons quite unknown, an eventually typical leukemia may be ushered in (as in one of our cases) by a protracted monocytosis with only slightly increased total leukocyte count. Our series adds nothing further that is noteworthy to the accepted picture of the signs, symptoms and blood picture of the condition.

**Duration**—Fulminating cases may last only a few days, at the other extreme, well authenticated cases have been known to continue, especially with judiciously applied radiation, for as long as from ten to fifteen years.<sup>10</sup> None of our series came near either of these extremes. While extensive remissions may occur, no definite recovery has ever been observed. Occasional recoveries of individual cases may safely be assigned to some other disease with a "leukemoid" blood picture.<sup>11</sup>

**Atypical Forms of Leukemia**—Too much has been written on this topic to demand detailed consideration here, and generalizations are not yet possible. One may find, even after careful study, that the diagnosis, say, between aleukemic leukemia and agranulocytosis, cannot be made. Omitting such obsolete categories as leukanemia, cases may be found with the clinical and postmortem picture of leukemia but with normal total and differential blood counts, or, conversely, with a protracted leukemic blood picture but without appropriate tissue changes, or with the clinical picture of lymphosarcoma and normal blood count and the autopsy changes of leukemia. A case of Dr. J. B. Deaver's,<sup>12</sup> in which the spleen had been justifiably removed for Banti's disease, after many months of improvement presented a progressive picture of myelogenous leukemia with the inevitably fatal outcome. Similar atypicalities might be detailed with profit but add nausiam.

**The Weight of the Leukemic Spleen**—The average weights of the spleens of the acute and chronic lymphatic and acute and chronic myelogenous spleens in our series have been compared both absolutely and in relation to the supposed normal for the age of each case (Vierordt's anatomische tabellen). Disregarding the inaccuracies in these "normal" figures, which apply about equally to all ages, surprisingly large figures are found for the lymphatic varieties, in fact, larger in the acute lymphatic than in the acute myelogenous type. While the spleen of chronic myelogenous leukemia still averaged the largest and presented the two largest spleens of the series (4,930 and 5,380 Gm.), the third largest was of the lymphatic type (4,400 Gm.).

#### LYMPHOSARCOMA AND LEUKOSARCOMA

Lymphosarcoma and Kundrat's lymphosarcomatosis present fewer difficulties from the clinical point of view. Some of their pathologic aspects of interest will be discussed later.

Sternberg's<sup>12</sup> concept of a condition between lymphatic leukemia and lymphosarcoma, with the blood picture of the former and the tissue changes of the latter, seems to be correct, in spite of Naegeli's view.

TABLE 2—Spleen Weight in Lymphatic and Myelogenous Leukemia

|  | Average<br>Absolute<br>Weight of Normal<br>(in Grams) | Per Cent<br>of Normal<br>Weight |
|--|---|---------------------------------|
| Acute lymphatic leukemia                           | 693.5   | 830                             |
| Chronic lymphatic leukemia                         | 1,297.5   | 874                             |
| Average for acute and chronic lymphatic leukemia   | 1,075.0   | 800                             |
| Acute myelogenous leukemia                         | 482.2   | 614                             |
| Chronic myelogenous leukemia                       | 1,879.2   | 1,251                           |
| Average for acute and chronic myelogenous leukemia | 1,333.0   | 902                             |

etiology, the possibility must also be borne in mind that, even if they were the precipitating causes in these cases, a leukemic basis may have been silently forming for an indefinite period beforehand.

**Blood Picture**—As might be expected, anemia developed more rapidly in the acute than in the chronic cases, an argument for its toxic or hemolytic nature rather than for being due solely to a crowding out of erythroblastic tissue in the marrow. A terminal aleukemic picture was found in only two (one acute and one chronic). It should be noted that, while this aleukemia is usually a transient or terminal state of the leukocyte count, it may dominate the picture throughout.

The cell type in blood and hematopoietic tissues conformed to the view that the large, immature cells predominate in the acute forms and the small mature varieties in the chronic. In leukemia, as elsewhere, the terms "acute" and "chronic" are hard to delimit, the one etymologically referring to sharpness and the other to time, and both tinged here with the factor of the type of predominant cell in the blood. The best rule of thumb seems to be governed mainly by the predominant cell. A plurality of immature cells indicates an acute variety, and it is rare indeed that such cases last more than from three to four months. Mature cells (usually in higher percentages than are the imma-

7 Bauer. Unpublished data.  
8 Rösler. O. Traumatiscche Leukämie und Priapismus. München. med. Wchnschr. 82: 217 (Feb. 7) 1935.  
9 Craver. L. F. read before the meeting of the American Society for Cancer Research 1935.

10 Leventis. Traian. Irradiation in Lymphosarcoma Hodgkins Disease and Leukemia. Am. J. M. Sc. 188: 612 (Nov.) 1934.  
11 Krumbhaar. E. B. Leukemoid Blood Pictures in Various Clinical Conditions. Am. J. M. Sc. 172: 519 (Oct.) 1926.  
12 Sternberg. Leukosarcomatosis. Beitr. z. path. Anat. 61: 75 1916.



that these rare cases are truly all leukemias. The crucial point, as brought out in our three cases of this type, is the true regional neoplastic growth in leukosarcoma (as in lymphosarcoma), as contrasted with the cellular infiltration, no matter how marked, of the leukemias.

#### PSEUDOLEUKEMIA

Pseudoleukemia is a term which fortunately has not had to be used in our analysis. Since first conceived by Cohnheim, this category has had so many concise conditions segregated from it—Hodgkin's disease, aleukemic leukemia, the reticulosos, erythroblastosis fetalis, and the like—that it seems now destined for oblivion. And this, I may add, in my opinion, is a proper way for medical science to progress. First, a noncommittal term for a vaguely comprehended condition, to be replaced or discarded as knowledge becomes more adequate.

#### RETICULOSES

The latest additions to the lymphomatoid diseases are the three types of changes in the reticulo-endothelial system, which may be regarded as analogous to the lymphatic leukemia, aleukemic leukemia and lymphosarcoma of the lymphocyte system, i. e., monocytic leukemia (leukemic reticulosis or reticulo-endotheliosis), aleukemic reticulosis, and reticular cell sarcoma (retrothelial sarcoma).

First described in 1913 by Reschad and Schilling,<sup>18</sup> monocytic leukemia is now well established as a rare condition, occurring either in the acute monoblastic or the more chronic monocytic form. Except for the predominance of monoblasts and monocytes in the blood stream and tissues, the disease presents no striking differences from the clinical and postmortem picture of lymphatic leukemia. In the only case we had in this series, L. S., a girl aged 16 years, the onset was sudden with facial paralysis and, shortly afterward, pain and swelling over one eye, and dizziness, a rapidly extending involvement of the skin, both breasts and the inguinal and submaxillary lymph nodes. (A possible onset a month before the paralysis was considered, because of a painless purple lump that appeared on the tongue.) During the nine weeks that elapsed before death, the total leukocyte count reached 257,000, with 90 per cent monocytes. At autopsy, the typical extensive involvement of bone marrow and most of the organs did not permit one to be precise as to where the process had started.

In aleukemic reticulosis, as in aleukemic leukemia, benign accumulations of tissue histiocytes (reticulo-endothelial cells) are found distributed to varying degrees through the organs, without any changes in the blood picture.

The reticulum cell sarcoma (which includes those of the older large round cell sarcoma group that are not large lymphocytomas or lymphoblastomas) is the analogue of the lymphosarcoma in the lymphatic group and obeys somewhat similar laws. Sometimes the cell cytoplasm is rounded, sometimes it can be seen tailing off into the adjacent reticulum. A practical and biologic difference from lymphosarcoma is its considerably greater resistance to radiation treatment. In still further analogy to the lymphocyte situation a few cases have been reported with the blood picture of monocytic leukemia and the tissue changes of sarcoma—what might be called a monocytic leukosarcoma. It must be

admitted, however, that all these developments are too recent and too rare to have settled down to a final level for evaluation.

One other condition should be mentioned—the giant follicular hyperplasia in spleen or lymph nodes or both of Brill, Baehr and Rosenthal.<sup>14</sup> Remaining localized for some years as a benign lymphoma or lymphoblastoma, several of these cases have now been observed to change into malignant tumors, usually lymphosarcoma, but sometimes reticular cell sarcoma, both of these cells being present of course in the original growth. This condition is also noteworthy as being especially susceptible to irradiation, so that the suggestion has been made that splenomegalies of unknown nature should be given a course of irradiation, as a diagnostic as well as a therapeutic measure.

#### HODGKIN'S DISEASE

As long as the general group under consideration bears such a noncommittal title as "lymphomatoid diseases," the inclusion of Hodgkin's disease can raise no objection. Its many similarities and analogies to other

TABLE 3—4 *Classification of Primary Myelogenous, Lymphocytic and Reticular Disorders*

|  | Myelogenous  | Lymphocytic   | Reticular   |
|--|--|---|---|
| A<br>Tissue hyperplasia and leukemic blood           | Acute myelogenous leukemia (leukemic myelosis) chronic myelogenous leukemia                      | Acute lymphocytic leukemia (leukemic lymphadenosis) chronic lymphocytic leukemia                  | Monoblastic leukemia (leukemic reticulosis) monocytic leukemia          |
| B<br>Aleukemic variety of A (temporary or permanent) | Aleukemic acute myelogenous leukemia (aleukemic myelosis) aleukemic chronic myelogenous leukemia | Aleukemic acute lymphatic leukemia (aleukemic lymphadenosis) aleukemic chronic lymphatic leukemia | Aleukemic monocytic leukemia (aleukemic reticulosis)                    |
| C<br>Malignant tissue changes only                   | Myelogenous myeloma myelochloroma (aleukemic)  | Lymphosarcoma lymphoid myeloma plasma cell myeloma lymphochloroma                                 | Reticulum cell sarcoma (retrothelial sarcoma)                           |
| D<br>Combination of A and C                          | (Myelogenous leukosarcoma)* myelochloroma (leukemic)   | Lymphatic leukosarcoma lymphochloroma (leukemic)  | Monocytic leukosarcoma (retrothelial sarcoma with leukemic reticulosis) |

\* Not yet described

members of the group have formed the basis for many articles in the medical literature of this century. The present study has brought out but little of further interest. The age and sex distribution and duration of the disease reflect the current opinions. The relatively infrequent association with active tuberculosis (four of thirty-five cases) is the more valuable as evidence from being based entirely on postmortem studies. The absence of any cases of terminal Hodgkin's sarcoma is also noteworthy, though it must be admitted that the same material in the hands of other pathologists might have produced different results.

**Etiology.**—The fundamental question of the cause of these lymphomatoid diseases unfortunately remains in the same obscurity that has enveloped it for a generation or more. Those who frankly regard them all as malignant neoplasms are the most contented, as further classification then becomes of minor importance and no specific curative treatment other than that of malignant tumors in general need be sought for. The proponents of the infectious nature of some of them, on the other hand, must search for possible separate causative

<sup>13</sup> Reschad H. and Schilling Torgau V. Munchen med Wchnschr 60: 1199, 1913

<sup>14</sup> Brill N. E., Baehr George and Rosenthal Nathan. Generalized Giant Lymph Follicle Hyperplasia of Lymph Nodes and Spleen. A Hitherto Undescribed Type. J. A. M. A. 84: 668 (Feb. 28) 1925

agents for each—agents that will satisfy the more exacting modern requirements than those of Koch's postulates. Most of the micro-organisms that from time to time have been incriminated for a number of these diseases can safely be passed by, with the exception of the tubercle bacillus, which in its avian form, in spite of accumulated negative evidence still staggers along as a possible cause of Hodgkin's disease. Desjardins<sup>15</sup> believes that any chronic infection may act as the immediate cause of most of these diseases and that this infectious cause can be elicited by careful history taking. But careful history taking will elicit episodes of sore throats, sinusitis and the like in so many persons who do not have these diseases that *post hoc* seems a much more suitable term to use here than *propter hoc*. Certainly more definite support than the probable hereditary predisposition that Desjardins adds is required to make this concept more than an interesting suggestion. The field of virus diseases, now being so assiduously cultivated, may afford an unexpected crop, but it must be admitted that its latest contribution, Gordon's production in animals of encephalitis from Hodgkin's lymph nodes, seems to be only of diagnostic use. The production of a similar encephalitis by normal bone marrow and other tissues lends weight to the theory that the injected material has merely activated in the rabbit a dormant virus disease. The frequent relationship to the onset of leukemia of trauma, pregnancy and so on, like the frequent association of tuberculosis with Hodgkin's disease while too striking to be summarily dismissed as coincidence, can be used almost as well to support either the neoplastic or the infection theory. In lymphosarcoma, reticular cell sarcoma and the chloromas, of course, a neoplastic origin is obvious from a study of the tissue changes.

In the field of the leukemias, about the most important of the whole group, the demonstration of the neoplastic nature of the transmissible forms in mice and fowls<sup>16</sup> offers a strong analogy for a similar neoplastic nature in the human disease—I say analogy rather than demonstration, as it is well known that similar disease pictures can be produced in different species by different disease processes. Though some authorities would assign an infectious nature to the acute leukemias (in view of the febrile and ulcerative onsets) and a neoplastic to the chronic forms, more imposing arguments point to a similar cause for the two. Not only do the animal experiments produce all gradations between acute and chronic forms with the same virus, but in the human disease, in my opinion at least, transition and intermediate forms can also be found, and furthermore the fundamental changes—the lesions in the hematopoietic system—are essentially similar in both acute and chronic types. Further evidence toward the neoplastic nature of the leukemias is the occurrence of so-called leukosarcoma, the intermediate stage between leukemia and the admittedly neoplastic lymphosarcoma. However, Naegeli, one of the world's leading hematologists, finds so many points against both neoplasm and infection that he favors, quite theoretically, an irreparable dysharmony of the endocrine system! For Hodgkin's disease, on the other hand, if this diagnosis is limited as it should be to cases conforming

to the classic histologic picture, as has been indicated elsewhere,<sup>6</sup> the evidence in favor of an infectious origin is more impressive. In neither leukemia nor Hodgkin's disease, however, can the etiology be regarded as determined.

In conditions such as granuloma fungoides, von Jaksch's disease and Banti's disease, the point has scarcely been reached at which etiology can be intelligently considered. These are hardly more than dump heap clinical terms, which may disappear entirely as other definite concepts are removed from the heap.

#### PATHOLOGIC ANATOMY

Pathologic histology, which undoubtedly remains the surest basis both for classification of the lymphomatoid diseases and for the diagnosis of individual cases, should be utilized whenever possible. Even here, however, neither the method nor the pathologist is infallible. In fact, this field presents a superlative example of the need for the pathologist to base his opinion on all the information that he can acquire from many different angles. In the lymphocytic group, for instance it would frequently be impossible to tell from a histologic preparation of a lymph node alone whether one was dealing with leukemia, lymphosarcoma or leukosarcoma. The architecture is destroyed in all by small lymphocytes, which invade the capsule and show an increased number of mitoses. It is only when one sees that there is a true regional neoplastic growth and spread (as compared with the metastatic cell infiltrations of leukemia) that lymphosarcoma (and leukosarcoma) can be diagnosed. As compared to the picture in Hodgkin's disease, in leukemia and lymphosarcoma the growth of lymphoid cells, whether local or general, is a uniform one.

Occasionally material from a lymph node excised during life will legitimately be diagnosed lymphosarcoma, say, or Hodgkin's disease, only to be proved at autopsy some months or years later that the opposite picture predominated. Such rare happenings do not necessarily mean that one disease has changed into the other or that a new pathologist is needed, rather that the histologic method, albeit the best now available, has its limitations and that sometimes peripheral lymph nodes are not true indicators of the essential lesion. In some cases, it must be admitted, it is hard not to accept the theory that one disease has been transposed into the other.

Most of the lymphomatoid group of diseases are peculiarly susceptible to radiation therapy. This means that much of the tissue that reaches the pathologist will exhibit radiation changes—another stumbling block in the way of accurate diagnosis. One of our cases of lymphosarcoma, starting in the cervical nodes, but eventually widespread through the body, proved unusually resistant to x-rays. In the autopsy preparations, phagocytosis of tumor cells was the outstanding feature. Though deductions on the basis of a single case are impossible, one can speculate here on possible resistance relationships and at least, as pathologists, admire the extraordinary amount of phagocytosis shown!

The tissue changes in the lymphatic group are much more homogeneous than in the myelogenous leukemias, where a variety of cells seem to be stimulated to increased production. In addition to the granulocytic series in all stages of maturity, in the bone marrow, the erythrocyte series may be greatly increased (beyond the amount that the degree of anemia would indicate)

15 Desjardins A U. The Etiology of Lymphoblastoma J A M A 103 1033 (Oct 6) 1934

16 Ellermann Experimental Leukämie bei Hühner, Verh d. deutsch. path. Gesellsch 12 224 1908 Furth J and Strumia M. Studies on Transmissible Lymphoid Leucemia of Mice, J Exper Med 53:715 (May) 1931 Furth J, ibid. 59:501 (April) 1934 Richter M N and MacDowell E C. Studies on Mouse Leukemia, J Exper Med 57 1 (Jan) 1933

Megakaryocytes are also increased, and this may be reflected peripherally by considerable increase in the blood platelets. The nature of such a "panmyelosis" is not clear, perhaps it is a nonspecific stimulation of other bone marrow elements than the myelogenous or perhaps a more fundamental manifestation of the nature of the disease.

The limitations of the purely morphologic approach to the study of the essential cells of the lymphatoid diseases have already been somewhat broken down by more biologic methods of study. The reactions to vital dyes, the peroxidase stains, the test for proteolytic ferments (present in the granulocytic absent in the lymphocytic series), the angle of the mitotic spindle,<sup>17</sup> Isaacs'<sup>18</sup> and Groat's<sup>19</sup> observation of the apparently constant haploid state of the chromosomes in mitosis, all these promise to make further contributions to our knowledge of the essential nature of the cells. Dr. H. M. Dixon, in our department, pursuing another line toward the same goal, is making quantitative warm stage studies of the motility and direction of movement of these cells. He has already found, for instance, that whereas normal human lymphocytes retain progressive motility for more than a week under these conditions, lymphocytes from a case of acute lymphatic leukemia, in preparations in which the sensitive neutrophils moved normally, moved for only an hour, after which they remained round and stationary and apparently dead. In another chronic case the lymphocyte motility was even less. Monocytes from the case of monocytic leukemia, previously referred to, showed no progressive motility and changed shape much less than the monocytes from a case of infectious mononucleosis. Such observations, which have not yet developed far enough to be regarded as more than suggestive, are in accord with Furth's views that in his transmissible leukemias the leukemic cells are pathologic from the start, are the only contributors to the host's high count, and are to be sharply differentiated from the same type of cells of the host into which they have been transmitted.<sup>20</sup>

#### THE SKIN

The skin manifestations of several of the lymphomatoid diseases have been sufficiently complex to produce the same problems and confusion among the dermatologists as in the general field. Here also has the term "lymphoblastoma" been stretched and twisted almost out of recognition<sup>21</sup> of its original meaning in general pathology. In my comparative ignorance of this phase of the subject, yet realizing its importance in the whole picture, I have sought the help of my colleague Dr. Weidman and hope that I am not misrepresenting him here. Not only may we find in the skin Hodgkin's disease, universal or circumscribed leukemia of the skin of both lymphatic and myelogenous varieties, lymphosarcomatosis and leukemic and aleukemic reticulosis, all of these as accompanying and sometimes as apparently primary manifestations but also such conditions as granuloma (mycosis) fungoides must be reckoned with. Originally, and still for that matter used as a descriptive term without known etiology (except that it is not a mycosis<sup>1</sup>), the concept

of granuloma fungoides (like splenic anemia) has had more and more cases taken from it as more and more knowledge has accumulated about their pathologic histology. How many more are still to come is a question that will long remain unanswered. Without biopsy, the clinician may still be forced back to the primitive state of calling any of these conditions granuloma fungoides. Cases reported, then, as granuloma fungoides terminating as leukemia are more simply and correctly regarded as true leukemia cutis with the early appearance of mycosis fungoides. To make matters still worse for our skin colleagues, apparent transitions are found in a case of leukemia skin nodules with the histologic picture of Hodgkin's disease, or in the same individual nodules at one time presenting the picture of Hodgkin's disease and at another of leukemia or lymphosarcoma. Also, all these conditions may be preceded for months or even years by a quite unspecific erythrodermia and general adenopathy.<sup>1</sup>

Somewhat similar to the situation in the skin is the occurrence of Mikulicz's syndrome, an extremely rare bilateral infiltration of lacrimal and salivary glands by lymphocytes or reticulo-endothelial cells resembling those of Hodgkin's disease. When found independently, i. e., not an accompaniment of leukemia, lymphosarcoma or Hodgkin's disease it is dignified with the name Mikulicz's disease. Its cause is as obscure as that of the parent conditions, and the reasons for the election of lacrimal and salivary glands are also not apparent.

#### SUMMARY

1 Although the group of diseases under consideration includes several of different or unknown etiology, and a pathologic histology that is recognizably different in most, the great similarity or overlapping of many of the clinical pictures makes it convenient and advisable to include them in a group designation.

For this heterogeneous group, a noncommittal term "lymphomatoid diseases" is suggested instead of the scientifically inaccurate and progress-inhibiting designation of "lymphoblastoma," with its unjustifiable indication of neoplasm. It is further suggested that the latter term be reserved for the use for which it was coined, "a tumor derived from the lymphoblast," and not distorted out of sense to supply a clinical need.

2 In spite of, or rather in view of the overlapping and often baffling clinical pictures met the classification and the individual diagnoses as far as possible should be on a pathologic basis. It is more desirable to leave the diagnosis of cases in which this is impossible as tentative or unmade than to make unwarranted groupings under a single head for the sake of giving a label to a greater number of individual cases.

3 An analysis of 150 cases of these lymphomatoid and related diseases in the autopsy records of the University and Philadelphia General hospitals has brought out various items of etiologic and pathologic interest. Useful light on the essential nature of the diseases, however, has not been forthcoming.

4 Phagocytosis of tumor cells may occasionally be so marked as to require consideration as a factor in tumor resistance.

5 The lymphomatoid diseases are practically all alike in having a fatal prognosis, though the duration may extend from a few days to many years. With few exceptions they are peculiarly susceptible to and improved by radiation treatment. The relative resistance of the reticuloses to radiation may prove useful in segregating this group.

<sup>17</sup> Warren, Shields. The Angle of the Mitotic Spindles in Malignant Cells, *Am J Path. (Suppl.)* 9:781, 1933.

<sup>18</sup> Isaacs, Raphael. Development of the Myeloblast in Chronic Myelogenous Leukemia, *Arch Path. & B.* 1298 (June) 1930.

<sup>19</sup> Groat, W. A. Leukemias Showing Haploid Leukoblasts, *Am J. Sc.* 185:624 (May) 1933.

<sup>20</sup> Lewis, Warren. Normal and Malignant Cells, *Science* 51:545 (June 7) 1935.

<sup>21</sup> Frazer, J. F. Mycosis Fungoides, *Arch. Dermat. & Syph.* 12:514 (Dec.) 1925. Keim, H. L. The Lymphoblastomas, *ibid.* 19:533 (April) 1929. Loveiman, A. B. Cutaneous Manifestations of the Lymphoblastomas, *J. A. M. A.* 104:1583 (May 4) 1935.

## Council on Pharmacy and Chemistry

### PRELIMINARY REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING  
PRELIMINARY REPORTS  
PAUL NICHOLAS LEECH SECRETARY

#### CYCLOPROPANE FOR ANESTHESIA (OHIO CHEMICAL AND MANUFACTURING CO)

Two papers on Cyclopropane for Anesthesia were offered to be read at the Atlantic City session of the A M A. In accordance with its usual custom, the Committee on Scientific Assembly asked that the Council consider the product before the papers were accepted for the program. The Ohio Chemical & Manufacturing Co presented the product for the Council's consideration for the purpose of issuing a preliminary report.

John Snow, noting the type of anesthetics produced by chloroform and ether, studied the hydrocarbons in an attempt to find an agent which combined the best features of the two. He used amylene clinically but he was at a decided disadvantage because oxygen was not available to him. Many hydrocarbons have since been used, but only one is in general use ethylene.

Lucas and Henderson, studying propylene, noted its isomer cyclopropane. Applying it to animals, they found it more powerful and less toxic than propylene.<sup>1</sup> Other workers have continued these studies and extended its use into clinical fields.

Cyclopropane was first noted as trimethylene by von Freund<sup>2</sup> in 1882. It is an inflammable gas,<sup>3</sup> less explosive than ethylene<sup>4</sup> or nitrous oxide ether mixtures.<sup>5</sup> No explosions have been reported and the closed circuit technique of administration helps to avoid them.<sup>5</sup>

More than 5,000 clinical administrations have been reported in patients of all ages<sup>6</sup> and in practically all surgical conditions. It has been used in obstetrics by Griffith<sup>7</sup> and Bourne.<sup>7</sup> It is recommended for all types of individuals,<sup>8</sup> and in grave circulatory risks and extremely ill patients,<sup>8</sup> largely on the basis of the high oxygen concentration possible with this anesthetic.

The induction is rapid<sup>9</sup> and pleasant,<sup>10</sup> and there is no choking or burning. Apprehension is said to be reduced, breathing is quiet,<sup>6</sup> and dreams are not produced. It is a powerful agent of low toxicity<sup>11</sup> in adequate concentrations and is non-irritating.<sup>3</sup> The awakening is prompt and pleasant.<sup>4</sup>

The usual preoperative procedures have been used with this agent,<sup>9</sup> and also the barbiturates<sup>6</sup> and spinal agents.<sup>5</sup> Less premedication is said to be required and even preferred with this agent.<sup>12</sup>

Its administration involves the use of the Waters-Forreger closed circuit method<sup>10</sup> by which the patient rebreathes the cyclopropane and oxygen, the carbon dioxide being absorbed in a soda lime set-up.<sup>5</sup> Low concentrations are said to produce an anesthesia similar to ether.<sup>4</sup> High concentrations are irritating.<sup>4</sup> Details of administration, rate and concentration of the agent and the oxygen appear in the various reports. They are at wide variance, as is individual susceptibility to the agent.<sup>13</sup>

The signs of the phases of the anesthesia produced by this agent have been studied extensively.<sup>14</sup> Romberger,<sup>15</sup> feeling Guedel's<sup>16</sup> stages and planes unsatisfactory for this agent, devised a separate standard for determining the depth of anesthesia produced by cyclopropane. The first phase, "induction," ends with the disappearance of the lid reflex. The second, "moderate anesthesia," ends with disappearance of the eyeball movement. The degree of "deep anesthesia," the third phase, is judged by the respiratory excursions and ends with apnea. Observations of the breathing bag<sup>15</sup> are useful in the third phase because the usual augmentation when diaphragmatic breathing supervenes does not occur with this agent. Laryngospasm occurs only at high concentration.<sup>17</sup>

In animals,<sup>1</sup> metabolic changes were absent. In clinical cases the carbon dioxide combining power, nonprotein nitrogen, phosphorus and sugar showed little change before, during and four hours after anesthesia.<sup>3</sup> Animals did not show kidney, liver or heart damage.<sup>1</sup> The normal and chloroform-damaged livers were unimpaired in normal and in starving dogs.<sup>11</sup> In clinical cases the parasympathetics were said<sup>8</sup> to be unaffected except at higher concentrations than were usually employed.

In some instances there was difficulty in obtaining proper relaxation.<sup>3</sup> Other writers had little or no difficulty with this problem.<sup>18</sup> More than the usual amount of oozing has been noted by some, but others deny this complication.<sup>5</sup> Cyclopropane is said to be nonirritating to the respiratory system<sup>3</sup> and breathing is therefore quiet.<sup>5</sup> On the basis of an unaffected respiratory center, apnea is not considered dangerous<sup>18</sup> and carbon dioxide is contraindicated in its relief. It is ameliorated with increased oxygen and lessened cyclopropane.<sup>15</sup> Fewer postoperative respiratory complications were noted with 2,200 cyclopropane cases than with 2,200 cases in which other agents<sup>19</sup> were given.

In ordinary concentrations there is said to be very little effect on the blood pressure. The effect on the heart is slight, as indicated by the clinical notes and electrocardiographic studies. In the 4,400 cases referred to,<sup>19</sup> cyclopropane suffered by comparison on the basis of cardiac complications (in spite of the advantages of high oxygen concentration).

In obstetrics the agent seems to have been more useful than in other fields. The lack of effect on the respiratory center and the oxygen concentration seemed to be advantageous to both the mother and the child.<sup>7</sup> It is used in analgesia as well as in anesthesia.<sup>20</sup>

In Waters and Schmidt's reports<sup>19</sup> there was very little difference in the total number of complications resulting from cyclopropane and other agents (2,200 cases each).

The final test of any anesthetic agent is mortality occurring with its use. In the latest summary, Waters and Schmidt<sup>19</sup> report a mortality of 4.16 per cent as compared with 3.99 per cent with other agents (2,200 cases each). This figure is not at marked variance, but the attempt is ever to prevent just such small increases. It must be noted that these workers used higher concentrations than other writers, that they are working with a new, potent agent, and that, even in such a large series, percentages may be misleading. Nevertheless further consideration must be deferred until more evidence is available of its superiority and usefulness.

The Clinical Congress of Anesthetists, which met Oct. 13, 1934, in Boston placed this agent on a carefully controlled program of distribution and use for one year.

An article appearing in this issue reports its use with in brom-ethanol in general surgical cases,<sup>8</sup> with apparent success. The use in combination with spinal anesthesia confuses the issue somewhat.

The Council has deferred further consideration of Cyclopropane for Anesthesia (Ohio Chemical and Manufacturing Company) until more evidence of its usefulness is available.

- 1 Lucas G H W and Henderson V E. New Anesthetic Gas Cyclopropane. *Canad M A J* 21: 173 (Aug) 1929. Henderson and Lucas. Cyclopropane. A New Anesthetic Anesth & Analg 9:1 (Jan Feb) 1930. Lucas and Henderson. Effect of Cyclopropane on Metabolism. *Arch internat. de pharmacodyn et de therap* 37 (II) 155 1930.
- 2 von Freund, A. Ueber Trimethylene. *Monatsh f Chemie* 3: 625 (July 13) 1882.
- 3 Waters R M and Schmidt, E R. Cyclopropane Anesthesia. *J A M A* 103: 975 (Sept. 29) 1934.
- 4 Stiles J A Neff W B Rovenstein E A and Waters R M. Cyclopropane as an Anesthetic Agent. *Anesth & Analg* 13: 56 (March April) 1934.
- 5 Griffith H R. Cyclopropane Anesthesia. *Canad M A J* 31: 157 (Aug) 1934.
- 6 Stiles Neff Rovenstein and Waters. Griffith.<sup>4</sup>
- 7 Bourne W. Cyclopropane Anesthesia in Obstetrics. *Lancet* 2: 20 (July 7) 1934.
- 8 Wood P M. Clinical Use of Cyclopropane and Trihom Ethanol in Amylene Hydrate, this issue p 275.
- 9 Stiles Neff Rovenstein and Waters. Waters and Schmidt.<sup>3</sup> Griffith.<sup>4</sup>
- 10 Waters and Schmidt.<sup>3</sup> Griffith.<sup>4</sup>
- 11 Raginsky B B and Bourne Wesley. Effects of Cyclopropane on the Normal and Impaired Liver. *Canad M A J* 31: 500 (Nov) 1934.
- 12 Stiles Neff Rovenstein and Waters. Romberger.<sup>14</sup>
- 13 Severs, M H Meek, W J Rovenstein E A and Stiles J A. A Study of Cyclopropane Anesthesia, *J Pharmacol & Exper Therap* 51: 1 (May) 1934.

- 14 Severs Meek, Rovenstein and Stiles.<sup>12</sup> Stiles Neff Rovenstein and Waters.<sup>4</sup> Griffith.<sup>4</sup> Romberger.<sup>15</sup> Schmidt and Waters.<sup>19</sup>
- 15 Romberger F T. Signs and Phases of Cyclopropane Anesthesia. *J Indust. State Med* 28: 18 (Jan) 1935.
- 16 Guedel A E. Stages of Anesthesia and Reclassification of the Signs of Anesthesia. *Anesth & Analg* 6: 157 (Aug) 1927.
- 17 Stiles Neff Rovenstein and Waters.<sup>4</sup> Wood.<sup>8</sup>
- 18 Severs Meek Rovenstein and Stiles.<sup>12</sup> Stiles Neff Rovenstein and Waters.<sup>4</sup> Griffith.<sup>4</sup>
- 19 Schmidt E R and Waters R M. Cyclopropane Anesthesia. *Anesth & Analg* 14: 1 (Jan Feb) 1935.
- 20 Griffith.<sup>4</sup> Bourne.<sup>7</sup>

## CHONDROITIN

At the request of Dr L A Crandall, the Wilson Laboratories submitted Chondroitin for the Council's consideration in connection with a paper by Crandall et al, on the use of the preparation in the treatment of idiopathic headache, which was later read at the Atlantic City session of the American Medical Association.

Chondroitin is stated to be a mixture of chondroitin and chondroitin sulfuric acid, containing not less than 70 per cent of the mixture calculated as chondroitin sulfuric acid. According to the manufacturer, chondroitin sulfuric acid is a definite chemical compound of 2 molecules of glucuronic acid, 2 molecules of galactosamine to which acetyl radicals are attached, and two sulfate groups

The previous evidence for the usefulness of Chondroitin consists of the first report by Crandall and Roberts of clinical trials of its usefulness in the treatment of forty-two cases of idiopathic headache. Such effects had been previously noted in the treatment of peptic ulcer with Chondroitin. The results are given in the accompanying table.

The authors claim satisfactory results in 50 per cent of the cases. The markedly relieved group (50 per cent) includes those cases in which headache had been abolished or lessened in both frequency and severity. The patients were free from sinus infections, errors of refraction and other local conditions but were noted in some cases as having various systemic disturbances. The migraine group includes only those having a personal and family history of periodic headache with two of the three following conditions: aura, nausea and vomiting, and hemicrania.

It was noted that there was a loosening of the stool that prevented treatment in one case, Chondroitin was also cathartic in two other cases, but catharsis had no effect on the results, or lack of results. No other untoward effects were mentioned.

The article read by Dr Crandall reported extension of his work to embrace a period of three years and a total of 151 cases. The results were similar to those in the preliminary article. The lack of knowledge of the pharmacologic action of Chondroitin is noted.

Headaches Treated with Chondroitin

|                      | No of Cases | Markedly Relieved | Partially Relieved | Not Improved | Recurrence Without Treatment |
|----------------------|-------------|-------------------|--------------------|--------------|------------------------------|
| Cases of migraine    | 25          | 14                | 7                  | 4            | 13                           |
| Migrainoid headaches | 10          | 3                 | 4                  | 3            | 5                            |
| Simple headaches     | 6           | 4                 | 2                  | 0            | 4                            |

In brief the Council calls attention to the following points in connection with Chondroitin:

- 1 The pharmacologic action is undetermined
- 2 It is for use in conditions of unknown etiology (idiopathic headache)
- 3 In many cases the alleviation of the symptom continues only if medication is continued
- 4 The results require confirmation from additional sources
- 5 The number of cases reported is insufficient on which to determine usefulness of this type of preparation

Chondroitin has been patented (U S patent 1950100) and the patent assigned to Northwestern University. The Wilson Laboratories has been granted a license to manufacture Chondroitin by the university.

The following statement in regard to the patent has been submitted by Dr Crandall:

"A STATEMENT OF THE POLICY OF THE CHONDROITIN COMMITTEE, NORTHWESTERN UNIVERSITY"

When it became apparent that Chondroitin might possess therapeutic value in the treatment of idiopathic headache, those responsible for the development of this product in deliberation with officials of Northwestern University reached the conclusion that the interests of the public would best be served by control under a United States patent. It is believed that Chondroitin is the type of product which if finally shown to be of therapeutic value would be liable to an undesirable type of commercial exploitation unless so protected.

U S Patent 1950100 was granted to Lathan A Crandall Jr on March 6, 1934. This patent was assigned by him to Northwestern University for which assignment he received no remuneration. This patent is now being administered by the Chondroitin Committee of Northwestern University.

"This committee has administered the patent as follows:

1 Because of the cooperation of the Wilson Laboratories in the development of Chondroitin they have been granted a license which is exclusive for a certain period.

2 Each lot of Chondroitin marketed must conform to the specifications of the Chondroitin Committee. The advertising of the product must be approved by the committee.

3 Northwestern University receives a royalty of 5 per cent on all sales of Chondroitin. This income is used to defray the expenses of testing the product. Any sums in excess will be devoted to research.

4 No individual has or will personally profit from the sale of patent rights or from royalties.

Space prevents the presentation of details concerning contracts and licenses. Such details are held available to the profession.

THE CHONDROITIN COMMITTEE OF NORTHWESTERN UNIVERSITY,  
IRVING S CUTLER  
ANDREW C LEE  
LATHAN A CRANDALL, Jr."

The Council deferred consideration of Chondroitin (and the presented brand) until further studies of its pharmacologic action and confirmatory clinical reports from additional sources are available.

## Committee on Foods

## ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION, AND FOR GENERAL PROMULGATION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

## HAWAIIAN PINEAPPLE JUICE

- 1 ECCO BRAND
- 2 FAIRWAY WHITE LABEL BRAND
- 3 LEHMANN'S DE LUXE BRAND
- 4 OLD GOLD BRAND
- 5 SOLITAIRE BRAND
- 6 RADIO BRAND
- 7 SUPREME COURT BRAND
- 8 THAMES VALLEY BRAND
- 9 WINFIELD SUPREME BRAND
- 10 YANKEE BRAND

Distributors—1 Economy Grocery Stores Corp., Boston  
2 Twin City Wholesale Grocer Company, St Paul  
3 Lehmann Higginson Grocer Company, Wichita, Kan  
4 Geo D Emerson Co, Boston, Mass  
5 The Morcy Mercantile Company, Denver  
6 M J Caplan Co, Inc., Lawrence, Mass  
7 The W H Dunne Company, Norwich, N Y  
8 The Yankee Grain & Products Co., Norwich, Conn  
9 The Winfield Wholesale Grocery Company, Wichita and Winfield, Kan  
10 North Hudson Grocery Co, North Bergen N J

Packer—Hawaiian Pineapple Company, Ltd, San Francisco

Description—Canned Hawaiian Pineapple Juice retaining in high degree the natural vitamin content, the same as Dole Hawaiian Finest Quality Pineapple Juice (Unsweetened), (THE JOURNAL, June 3 1933, p 1769)

## BORDEN'S MISTLETOE BRAND

## EVAPORATED MILK

## BORDEN'S DIXIE BRAND EVAPORATED MILK

Manufacturer—The Borden Sales Company, Inc New York

Description—Canned evaporated milk, the same as Borden's Evaporated Milk (THE JOURNAL, Feb 15, 1930, p 485)

## DROMEDARY BRAND FLORIDA BLEND ORANGE-GRAPEFRUIT

Manufacturer—The Hills Brothers Company, New York.

Description—Blend of the accepted Dromedary Finest Florida Grapefruit (THE JOURNAL, July 25 1931, p 248) and sweetened orange segments.



# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, JANUARY 25 1935

## IN DEFENSE OF THE ADRENALS

Until recently, surgery on the glands of internal secretion had been restricted largely to the gonads and the thyroid. As knowledge of the functions of the endocrine organs has increased, many attempts have been made to suppress hyperfunction (real or alleged) of other glands. Different means to this end have been employed, chiefly roentgen irradiation or surgical manipulation, the latter usually consists in subtotal and less often in total extirpation of the offending organ. Attempts have been made also to sever the nerve supply.

As long as this interference with physiologic processes did not concern organs essential to life, the hazards were not excessive, but more recently surgeons and roentgenologists have been tampering with the adrenals.<sup>1</sup> Elsewhere in this issue appears an article by Rogoff<sup>1</sup> concerning a case of fatal Addison's disease which supervened on attempted denervation of the adrenals. This serious surgical intervention had been performed in the hope of ameliorating the diabetes mellitus from which the patient suffered. This operation and that of unilateral extirpation, bilateral subtotal resection or roentgen irradiation of the adrenals, has been done for the alleged relief of a variety of conditions, especially hypertension and other circulatory disorders, on the theory that these diseases are in some way related to hyperfunction of these organs. As pointed out in the symposium on Glandular Physiology and Therapy,<sup>2</sup> recently published under the auspices of the Council on Pharmacy and Chemistry, evidence implicating the adrenals in these disease states is exceedingly meager and certainly cannot justify surgical operations on a gland which not only is necessary for life but is relatively inaccessible and lies in a nest of highly sensitive nerve structures.

The readiness with which surgeons undertake this procedure is surprising, it has even been advocated for such a condition as hirsutism in the female, which in itself is of no danger to life or health. Other condi-

tions for which bilateral denervation or subtotal resection of the adrenals has been done include such unrelated conditions as gastric ulcer, epilepsy, hyperthyroidism, Raynaud's disease and spontaneous gangrene.<sup>3</sup> As Rogoff aptly points out, "The very fact that it is alleged to be of benefit in so great a variety of diseases ought to render the practice suspect."

The proposed rationale of this concerted attack on the adrenals is derived from several observations which are sound in themselves. However, the logic whereby the clinical procedures are justified is not beyond reproach. Epinephrine causes a rise in blood pressure, tumors of the adrenal medulla may occur with attacks of hypertension. Therefore, say the proponents of adrenal surgery or irradiation, all (or at least a great many) cases of hypertension are due to hypersecretion of epinephrine and this must (at all costs) be suppressed. Epinephrine in pharmacologic doses causes a rise in blood sugar, ergo, diabetes may be due at least in part to hypersecretion of epinephrine and this must be abolished. Certain tumors of the adrenal cortex may lead to virilism, therefore, hirsutism in the female is due to hypersecretion by the adrenal cortex and subtotal resection of this gland is indicated. The fallacious nature of this generalized reasoning from special and limited cases has been pointed out elsewhere.<sup>4</sup> As Barr<sup>4b</sup> has recently emphasized, "The fundamental soundness of considering ordinary cases of hypertension, obesity and diabetes as possibly related to disturbed pituitary and adrenal function should not blind one to the fact that this is as yet only a hypothesis dependent for its validity in large part on analogy and circumstantial evidence. It must not be forgotten that the present surgical and roentgenologic approach in therapy is experimental and accompanied by no small dangers. Caution is necessary lest the newer knowledge be applied prematurely and too extensively in surgical and radiologic treatment."

These recommendations of caution are the more important not only because the risk of the therapeutic procedures is considerable but also because the methods themselves do not do what is claimed for them. Thus while denervation of the adrenals in animals may suppress the secretion of epinephrine for a time, it has been found that the nerves regenerate after several weeks and the epinephrine output returns to its former level.<sup>4a</sup> Removal of one adrenal or subtotal resection leads to functional compensation (with or without morphologic change) of the remaining adrenal tissue. In irradiating the adrenals it is of course impossible to avoid exposure of adjacent organs, and irradiation of the kidneys is one effective method of producing experimental hypertension.<sup>1, 5</sup>

<sup>3</sup> The adrenals have been accused as malefactors so frequently in the literature that the bibliography is too extensive for citation here.

<sup>4</sup> (a) Rogoff<sup>1</sup>; (b) Barr D P. Recent Advances in Endocrinology. Relation to Interpretation and Understanding of Common Symptoms. J. A. M. A. 105: 1760 (Nov. 30) 1935.

<sup>5</sup> Page I H. The Relationship of the Extrinsic Renal Nerves to the Origin of Experimental Hypertension. Am. J. Physiol. 112: 165 (May) 1935. Experimental Hypertension editorial. J. A. M. A. 105: 286 (July 27) 1935.

<sup>1</sup> Rogoff J M. Addison's Disease Following Adrenal Denervation in a Case of Diabetes Mellitus. This issue p. 279.

<sup>2</sup> Chapters XIX and XX of Glandular Physiology and Therapy. Chicago: American Medical Association 1935.

Excessive conservatism may delay advance in medicine, but interference with the adrenals in the absence of tumor of these organs does not have adequate justification in present knowledge of their functions. The therapeutic hazard in a disorder should not exceed the disease hazard.

### THE ANTIANEMIC PRINCIPLE OF THE STOMACH

Since the discovery of the effect of liver and of stomach in the treatment of pernicious anemia, many attempts have been made to elucidate the physiologic processes involved and to clarify the nature of the hematopoietic principle or principles of these organs. Much progress has been made in this field, yet the evidence has remained in large part contradictory and difficult of interpretation.<sup>1</sup>

A fundamental contribution to this problem has now been made by Greenspon,<sup>2</sup> who in a brilliant series of experiments has provided a key to the understanding of this subject. It has been known since the important studies of Castle, and subsequently of others, that the stomach plays a significant part in hematopoiesis and that in pernicious anemia there is a deficient secretion of a substance involved in blood formation. Castle showed that when normal gastric juice was incubated with beef (or with some other substances) the mixture when fed to a patient with pernicious anemia led to a marked reticulocyte response. Gastric juice alone or beef alone was ineffective. Later it was demonstrated that incubated mixtures of pig gastric mucosa and beef also gave a hematopoietic response. Castle elaborated a theory on the basis of these experiments of the existence of an "intrinsic" factor in stomach or gastric juice and of an "extrinsic" factor in beef or other substances which by their interaction lead to the formation of the antianemic principle. However, it has been difficult to reconcile all the known facts with this hypothesis, for instance, the effectiveness of fresh gastric mucosa alone or of whole desiccated stomach. It has been necessary to assume the presence in these materials of some substance that acts as an extrinsic factor.

The experiments of Greenspon now provide a simple explanation for the known facts without hypothesizing the existence of an extrinsic factor. When desiccated stomach was incubated with pepsin and hydrochloric acid and subsequently administered to a patient with pernicious anemia, a reticulocyte response did not occur. Stomach tissue was then depepsinized and administered, a definite hematopoietic effect resulted. The depepsinized tissue incubated with pepsin and hydrochloric acid was inactive, but when it was incubated with hydrochloric acid alone (in the absence of pepsin) reticulocytosis was obtained on administration. Thus it was demonstrated that (1) the pepsin content of normal

hog gastric mucosa could be removed without destroying the antipernicious anemia principle, (2) that peptic activity destroys the antipernicious anemia principle and (3) that hydrochloric acid alone does not.

Greenspon administered calcium carbonate orally to two normal subjects to diminish the acidity of the gastric juice, the latter was then aspirated into a cold container and immediately neutralized. The gastric juice so treated was administered daily to a patient with pernicious anemia, contrary to the results obtained by Castle with untreated gastric juice, a reticulocyte response of 14 per cent occurred on the seventh day. Thus it was shown that, when peptic activity is sufficiently diminished or prevented by neutralization and low temperature, the principle in gastric juice alone is an effective antianemic agent. On the basis of these results Greenspon has reinterpreted Castle's experiments. The beef (or other source of "extrinsic" factor) when incubated with normal gastric juice binds pepsin and prevents it from inactivating the antianemic principle which otherwise occurs unless the precautions adopted by Greenspon are used. It is therefore no longer necessary to assume the existence of an "extrinsic" factor.

Utilizing the knowledge that the antianemic principle in the stomach is inactivated by pepsin, Greenspon has been able to improve greatly on the potency of preparations of stomach tissue developed by Sharp and by Sturgis and Isaacs and of concentrates of gastric juice used by Morris. These fundamental investigations of Greenspon add another important chapter to the physiology of hematopoiesis and clarify with beautiful simplicity many of the confusing issues in this field.

### ADOLESCENT PSYCHOSES AND FATE OF PATIENTS WITH MENTAL DISEASE

The psychoses of adolescence<sup>1</sup> are important chiefly because, during this age period, the first manifestations of two mental clinical syndromes appear. The incidence of psychoses rises from the age of 15, before which time psychoses are infrequent. According to Dawson, the history of some adolescent psychoses indicates that a change in disposition may occur several years before hospitalization becomes necessary. The balance during adolescence between biologic urge and control by the higher centers is precarious. Probably some forms of adolescent instability are due to unequal development of the controlling and impulsive mechanisms. Growth should be full of effort. The quiet, passive adolescent is the one who seems most likely to develop the more serious psychoses.

Apart from the delirium that may accompany an acute infective illness, the more lengthy clouding of consciousness that goes by the name of confusion is not a common occurrence in adolescence. In most cases the prognosis is favorable. Occasionally residual

<sup>1</sup> The literature is reviewed by Randolph West, *Antianemic Material of Liver and Stomach*, chapter XXX of *Glandular Physiology and Therapy*, Chicago: American Medical Association, 1935.

<sup>2</sup> Greenspon, E. A., *The Nature of the Antipernicious Anemia Principle in Stomach*, this issue, p. 266.

<sup>1</sup> Dawson, W. S., *The Psychoses of Adolescence*, *Brit. M. J.* 2: 651 (Oct. 12) 1935.

mental impairment after a severe delirium or confusion is manifest. Closely associated with this group are the mental disturbances of acute encephalitis, taking usually the form of a drowsy delirium often with hallucinations or illusions of various senses. Although, as in neurosyphilis, actual dementia may occur, the striking features are deterioration of moral sense and the proneness to impulsive violence, which are uncommon in juvenile dementia paralytica.

Dementia praecox and manic-depressive psychosis are especially important at this age. In the former the history of a personality that is inadequate in the emotional rather than in the more purely intellectual field is sufficiently common to be significant. In such sensitive and self-centered persons character development is liable to be stunted through the absence of social contacts, the rivalries and struggles for self-expression that should comprise the essence of normal activity. Hence it comes about that the most trivial failure, the merest decline from quite exceptional ideals, throws the adolescent more into himself and adds yet another bar to his self-constructed prison. Thus it is important to draw a distinction between the life of retirement and self-denial, which at some periods is creative, and the type under discussion, which is merely indulgent, essentially effortless and futile. In the manic depressive psychosis there is often evidence in the prepsychotic personality of depression and hypochondriacal trends or of other manifestations of instability whereby the patient has usually been regarded by his parents as a "nervous" child. Until, however, there is more continuity of trained observation of the "nervous" child up to maturity, the retrospective assessment of morbid features will remain obscure and full of error and the fundamentals and incidentals will be hopelessly confused. Perhaps the most important advances in the understanding of these psychoses during the last three decades have resulted from a shifting of emphasis from symptoms to personality. From the prognostic standpoint it may be accepted that the more "normal" the person, the richer his interests, the greater the physical or mental stresses before the development of the psychosis and the more rapid the onset of mental symptoms, the better the outlook.

Another and different problem is the question as to what becomes of patients discharged from a mental hospital against advice. This has been recently investigated by Minski<sup>2</sup> on ninety such patients discharged from the Maudsley Hospital. These patients constituted only 2.8 per cent of the admissions and 3.5 per cent of the discharges of the hospital during the period of review. The reasons for leaving may be broadly classified in three groups. In some cases the relatives were asked to arrange removal to another hospital because, after the patients had been under observation for some time, the prognosis was considered to be bad.

In other cases the reason was the disturbing behavior which was upsetting other patients. There were twenty-seven in this group. There were thirty-three patients in the group who were taken home by relatives on their own initiative. The hospital is a voluntary one and thirty patients themselves decided to leave because of depressive delusions, paranoid delusions, or feelings of euphoria.

On seventeen of the patients, follow-up information was not available. Twenty-five were in mental hospitals, twenty-four were at home recovered (three after being in mental hospitals), sixteen were at home no better, seven had committed suicide, and one died at home from natural causes. Further subdivision revealed that, of the twenty-five considered suicidal risks, sixteen were in mental hospitals, five were recovered at home, two committed suicide and two were at home no better. Of the sixty-three showing restless behavior or resistiveness to feeding, nine were in mental hospitals, nineteen at home recovered, four at home no better, five committed suicide and one died at home. In view of the high proportion of suicides, Minski concludes, it seems necessary to urge relatives of patients suffering from severe depressive states to send them to suitable hospitals. In general, relatives seem to take a more serious view of states with excitement, since only four manic and three toxic confusional patients were taken home while excited.

Such studies as these are of great practical benefit to society as well as to individual medical men in determining the course of procedure and advice in certain common problems.

## Current Comment

### THE KANSAS CITY SESSION

Arrangements already completed indicate that the Kansas City session of the American Medical Association, May 11 to May 15, will possess many features of extraordinary interest. Practically all the exhibits and the sessions will be held in the new Kansas City Auditorium, one of the largest and finest auditoriums now available in the United States. The business administration of the Association is able to announce at this early date that practically all the exhibit space available for technical exhibits is under contract and that only a few additional booths are now available. The applications for space for the scientific exhibits have overwhelmed the committee and at least a hundred applicants will have to be disappointed on this occasion. The Council on Scientific Assembly, at its recent session with the secretaries of the sections, heard the outlines of new scientific programs equal in interest and usefulness to those of previous sessions. A special meeting will be devoted to problems of tuberculosis. Fifteen lecturers will appear in the General Scientific Meetings on Monday and Tuesday. Two distinguished foreign guests will also appear at these sessions: Lord Horder of England, physician to the premier and

<sup>2</sup> Minski, Louis. An Investigation into the After History of Ninety Patients Discharged from a Mental Hospital Against Advice. *J. Ment. Sc.* 81: 509 (July) 1935.

to King Edward VIII, will discuss thyrotoxicosis. He is a competent speaker and a leader in many significant medical organizations abroad. Prof. Afranio do Amaral, director of the Institute of Experimental Medicine in São Paulo, Brazil, will display motion pictures of the celebrated snake farm at Butantan, which is a part of the institute, and discuss the treatment of snake poisoning and the uses of antivenins. Dr. Amaral speaks excellent English, having had much of his training in the United States. The climate of Kansas City in May is salubrious, and its golf courses are numerous and interesting. It will be on its mettle to demonstrate its ability to handle a convention of the scope of the annual session of the American Medical Association. There are indications of a record breaking attendance. Those who plan to participate should arrange to secure hotel reservations as soon as possible.

## Medical Economics

### THE ASCENT OF THE MEDICAL PROFESSION

B. R. SHURLY, M.D.  
AND  
E. S. BULLOCK, M.D.  
DETROIT

In *Harper's Magazine* for November 1935 appeared a paper by Professor Laski—a mixture of nonsense truths, half-truths and no truths. His contribution to muddled thinking and irresponsible statement is called 'The Decline of the Professions.' We hope to show that the title is ill chosen. Had he been competent he would have selected the one that heads this paper.

At present doctors are engaged in a desperate struggle to resist the encroachments of socialized medicine. The problem is not yet acute with lawyers so they are not excited about it, though here and there are found some with the vision to comprehend that what happens to doctors will in the end happen to them. The enemy has already undermined the foundations of individualistic medicine.

#### ALTRUISM OF MEDICAL PRACTITIONERS

Doctors are among the most altruistic of men. If not so naturally they become so from the consistent pressure brought to bear on them throughout their active lives by their relations to sick and helpless people. They become protective and compassionate toward their fellow men—priests in a sense, occupying a holy temple. Careful studies of the returns from practice show that 40 per cent of their work is without financial remuneration—intelligent charity applied from an unusual opportunity to judge of needs. It is not claimed that they are so Christlike that they render the same joys and buoyant service to charity patients as to those who come fee in hand. Human nature cannot be that good. However the service is given freely, an instinctive response to human need. The physician may be a slave to long hours of work for which he is inadequately rewarded and with broken rest at night as Professor Laski says, but there is a tremendous difference between voluntary and involuntary servitude.

The portion of practice that continues to pay must not only carry living and office expenses, taxes, medical societies, visits to medical conventions, professional journals and books—all the manifold things that make demands on the doctor's purse—but as well withstand the growing competition of public medical agencies for which the doctor often works for poor pay or none at all, such as free clinics, hospitals, industrial and insur-

ance medical organizations and the ever growing and often pernicious activities of boards of health. These are not satisfied to retain the administration of health laws aimed at the control of contagious disease, which originally called them into being, but day by day and year by year reach out in bureaucratic fashion to take unto themselves the actual practice of medicine. Not satisfied with contagious diseases, they now extend their functions to include pregnancy. All of this is done without regard to the antisocial nature of their activities, directed to the pauperization of the people. Under the guise of apparent beneficence and social welfare they steadily undermine the spirit that colonized and developed this country. More than 50 per cent of what was formerly paid practice has already been absorbed by public (free) agencies. In just that proportion medicine is already socialized. All we hope to accomplish is to salvage the remaining 50 per cent that enables the profession to keep its self respect in relative freedom. The part we have lost we relinquish sorrowfully, recognizing that it has been at least partly our own fault. Only too readily have we listened to the siren voice of the whole crew of 'welfare' workers. They have taken advantage of the sentimental attitude we have developed in our constant contact with sick humanity. We have become as unrealistic as they are notwithstanding our biologic training, which has taught us that nature through ruthlessly competitive forces has accomplished by her methods our own emergence from the Devonian slime.

#### LEADERSHIP IN PREVENTIVE MEDICINE

Professor Laski claims that the medical profession is so exclusively occupied with problems of 'cure' that the vast field of preventive medicine is neglected. If he had been a medical student any time during the past forty years he would know better than to give utterance to what is not only untrue but constitutes a calumny on medicine. From the day a student enters college the importance of prevention is ground into him as the chief aim of his professionalism. It is partly at least in devotion to prevention that medicine has been betrayed by socialist schemes, which often seem a short cut to accomplish a big and important thing such as the control of tuberculosis.

Each forward step in the elimination of disease has been taken by and under the leadership of doctors, who remain through devotion to the ideal of prevention the only class or profession that steadily works to accomplish its own destruction. In this connection it is well to consider that which most readily comes to mind as one of the greatest if not the most important triumph of preventive medicine, namely, the phenomenal decline in the death rate from tuberculosis since 1905 (from 275 per hundred thousand to 56 per hundred thousand) for the moment leaving out of the picture the diminution that started in all civilized countries about 100 years ago as the result of factors about which scientific men continue to argue and know little.

On its face, though the decline in thirty years is a magnificent accomplishment of preventive medicine. Well who but doctors conceived it, developed it and kept it going? They remain the heart and soul of the campaign against tuberculosis though to be sure they have had enthusiastic lay assistance. All concede that this campaign has been an important element in the lessened death rate. The method by which it has been mostly accomplished the segregation of the tuberculous in public institutions is open to question. Thirty years ago private institutions for these people were being built all over the United States. Various agencies were concerned—social groups, charity organizations and individuals. For those who desired speed in accomplishment without necessarily counting the cost the problem seemed too big to be left in private hands, so the short cut of tax money was brought to bear. The idea was fathered by the medical profession (always careless of its own interests) as represented by Dr. Vincent V. Bowditch of Boston,

who in the eighties of the last century declared that tuberculosis, like war, was a state problem. Under his tutelage and that of the National Tuberculosis Association initiated by doctors at Atlantic City in 1905, the states and the federal government have built sanatoriums in almost every part of the Union. Counties also started their own institutions and in the large cities boards of health joined the rush to build public free institutions for tuberculosis. We can all take joy in the result, however it was achieved, and can envision a time say by 1980 when tuberculosis will have ceased to trouble us, but it would have come to pass just the same if it had been left in private hands. The private institutions now find it impossible to compete with those tax supported and are week by week folding up. In Denver the great Agnes Memorial stands silent and deserted, but one of many, and those remaining are in the agony of death.

The task would have been better performed had it been left in private hands, for the basic fault of public institutions, the fact that human nature is not good enough for socialism is a supreme impediment to the efficient accomplishment of any purpose they undertake. Whatever the result and disregarding the means employed, it constitutes a terrific indictment of the statement that professionally doctors are not sufficiently concerned with preventive medicine. It would take us too far afield to discuss what has been done in controlling malaria plague, cholera, typhoid, sleeping sickness, diphtheria and so on, but doctors did it all.

Forty years ago if a doctor had some prescription blanks, a stethoscope, a clinical thermometer, a scalpel, obstetric forceps, a urinary test set and a microscope with a few slides and stains he was well equipped for practice. Since that period the increase in cost of medical care has been largely due to the vast development of chemical and physiochemical tests—the laboratory side of medical practice. These tests are expensive and require extensive and elaborate laboratory facilities as well as trained technicians. X-ray equipment, now an essential adjunct to practice, has contributed a large and growing addition to costs, as has the necessity for physical apparatus, as a part of office furnishings, such as violet rays, infra-red rays and short wave diathermy. Medical education too has become more thorough and it takes much longer to turn out a doctor than it did a couple of generations ago, when a three year course on top of a high school diploma was considered sufficient. However, as far as the patient is concerned the increased cost is largely in the laboratory tests and roentgenograms which are essential to accurate diagnosis and as checks on treatment. All these things have so increased the burden of sickness that only the well-to-do think they can afford to be ill at all. This constitutes the principal element in the pressure to socialize medicine. There is more than one way of eliminating this difficulty without socializing the doctor himself, which, if it comes to pass, will in our opinion constitute a catastrophe for civilization.

#### RELATIONSHIP BETWEEN PHYSICIAN AND PATIENT

There are few relations in life so satisfactory as those between doctor and patient when the latter seeks medical aid prepared to pay a reasonable and moderate fee for the service rendered. It is a situation full of beauty quite outside its application to the relief of suffering or the cure of disease. The relation of confidence and respect that normally exists between lawyer and client, priest and suppliant is not comparable with it. The family doctor, and long may he live, is the recipient of sacred confidences and the most useful of friends quite outside his medical relations to the patient or family, but, of course, it is on such relations that all others are based. His interest and that of the patient coincide at every point. It is and must remain a peculiarly individual service. Its efficiency is intimately bound up in its private and

individual character. Anything that impairs it will be a blow at society, but particularly to those self respecting elements that stabilize a nation. It cannot retain the essential quality if the doctor becomes an employee of the state. Ask any physician who has walked the wards of public institutions, if the service given to the public charges thereon is or can ever be the same as to those patients in private practice. No, we proclaim, the heart and spirit go out of medical practice when it becomes an impersonal ministrations to those who are but casual incidents in a daily routine.

It is not necessary to abandon the sacred and beautiful attributes of private practice, the validity of which has been established by the collective experience of mankind. There is more than one way out.

It has been settled in this country that education is an essential and proper public function, based as it is on the indubitable fact that a democracy cannot exist without it. The health of the people is also of prime interest and importance. Health laws, the police and administration function of boards of health, adequate medical education do but reflect the quite proper feeling with regard to the whole great question of health. It may be necessary and expedient in order to bring good medical service within reach of the average citizen to extend the already existing public medical set-up to include laboratories equipped for clinical tests and x-ray photography, providing free service for those unable to pay and a small covering fee for those able to shoulder at least a part of the expense. Socialize, if you will, the mechanical and chemical side of medical practice. Doctors care little about it if they themselves are but left out of the picture.

#### MEDICAL COSTS AND THE FAMILY BUDGET

Nevertheless the actual fault is not nor has it ever been the cost of medical care. It lies rather in the failure of the people to take medical costs into consideration in the family budget, directly or by insurance. There is always a place for the automobile (one in six of the population), for "movies," baseball games and beauty parlors and so on ad infinitum.

Medical fees do not complicate the problem to any extent, for they have always been subject to arbitration. The noted specialist who charges a large fee will, if the matter is presented to him, take what the patient can pay rather than send him to a free clinic and encourage pauperization. The care of the sick poor, dyed in the wool variety, has always been a government function. It should be adequate as to essentials but should make no attempt to furnish frills. As an illustration of pauper psychology as it is being nourished in the United States it is illuminative to visit on any Sunday afternoon the poorhouse—which may have a fancy name, such as Elbow Hospital—attached to any large city and count the vast array of automobiles of visitors to relatives confined therein, mostly old fathers and mothers whose support might interfere with gas for the car or a permanent wave.

Turn where you will in this country today and witness one grand contradiction of the spirit which 300 years ago took a man and his growing family into the hinterland of Massachusetts with belongings confined to the clothes on their backs, gunpowder and bullets, a few blankets, an ax, pots and pans to face a New England winter and the Pequot Indians with the courage derived from a thousand years of yeomanry. When that spirit is dead it will be time for socialism. We shall be good for nothing else.

#### THE OTHER SIDE OF THE SHIELD

Professor Laski's unfitness for the task he assumes cannot be better illustrated than by what he says of the medical profession's relations to osteopathy, to which he refers as "a discipline struggling for recognition." Osteopathy means to a physician what a flat earth means to a cosmographer—that



and only that—for it is nothing but a "cult" based on ignorance, a short cut for the tough-minded and ruthless around the long and wearisome struggle to achieve adequate preparation for a scientific and sacred calling. As long as the average man remains the simple creature he is there will be cultists who, lacking a moral sense, are prepared to trade on ignorance added to credulity.

Again, Professor Laski says that "the average doctor who becomes a general practitioner is largely a prisoner serving a life sentence." This is one of those statements both true and false at the same time. He does not consider that the servitude is voluntary and may be served with daily satisfaction and often joy. Father Damien among the lepers was in a sense a slave, as we all are, especially those for whom "duty" still has a meaning, but it is improbable that he would have so regarded himself, nor do we doctors who ask that there shall remain enough patients able and willing to pay to permit us to be moderately comfortable while we practice our own chosen brand of voluntary servitude, which most of us continue to prefer to that of working for Uncle Sam as a doctor in one of the public services, the army or the navy. After knowing hundreds of doctors over a period of forty years, we feel that they have security now—at least all they deserve and all that is good for them.

Professor Laski also says that "doctors have little chance to keep up with their profession in any profound way." We of the profession know there is no lack of opportunity to grow and develop. Our all too many medical societies furnish that and they cover the land right down to the counties, where the leading men may be seen, heard and argued with in the free discussions that follow every paper, in which all are permitted to share. Thousands and thousands still find means to travel all over the land to attend medical meetings and conventions. We do not place the trouble where Professor Laski does but find it in the fact that many, all too many, doctors are too lazy (not too tired) to take advantage of the many agencies that are directed to professional improvement.

Again, Professor Laski accuses doctors of neglecting research. That is true and it is well that it is so, for research as such, laboratory research, requiring elaborate, expensive apparatus, is a life work in itself. Even if he is able to afford it, the time necessary is not available in the working day of the average practitioner. It is better performed by those connected with the teaching and scientific institutions. There is a type of research that is within the reach of all doctors and which, on the whole, is well performed: the study of one's own cases and checking in actual practice the discoveries made by the professional researcher. One of us many years ago was told by Dr. Robert Koch, a country doctor who discovered the cause of tuberculosis and cholera, "I happened down a road no one else had traveled and I could pick up nuggets almost any place I looked. The road is now well traveled and the nuggets are harder to find." His meaning was that research had become highly organized and specialized. The average doctor is but a finer edition of the average man, and research will be the better for his leaving it alone.

The statement most to be resented and which wracks a sense of justice and fair play is: "The profession, as a profession lacks that sense of urgent obligation to the public which alone could effect the radical reforms that are necessary. If true anything done to the profession of medicine would be justified—even socialization." Fortunately, in stating it he but betrays his profound ignorance of the spirit of medical practice or professionalism. There is no cure for him: he is too far gone in collectivism. He has become a fanatic. To those who remain amenable to reason it is recommended that the transactions of medical societies be consulted in which nearly every page bears witness that the motive force in medical professionalism is a profound sense of public obligation.

The faults Professor Laski presents are found on examination to be but half-truths when not wholly without truth. He has exhibited an almost complete misunderstanding of the spirit of medicine. He never turns the shield to see what is on the other side. He pours his allegations like sand through a funnel, the separate grains too numerous for attention. It is hoped that the other side of the shield has been presented here and that it justifies faith in the continuance of individualized professionalism as well as a conviction that we are going forward as fast as human nature permits.

62 Adams Avenue West.

## Association News

### ANNUAL CONGRESS ON MEDICAL EDUCATION, MEDICAL LICENSURE AND HOSPITALS

Program of Meetings to be held in Chicago, February 17 and 18

The thirty-second Annual Congress of the Council on Medical Education and Hospitals of the American Medical Association will be held at the Palmer House, Chicago, February 17 and 18. The Federation of State Medical Boards of the United States will participate in the congress. The program follows:

MONDAY, FEBRUARY 17, 10 A. M.

RAY LYMAN WILBUR M.D., Presiding

*Report of the Council on Medical Education and Hospitals*  
Ray Lyman Wilbur M.D. LL.D. Chairman Stanford University, Calif.

*The Accrediting of Higher Institutions*

George F. Zook, Ph.D. President, American Council on Education Washington, D.C.

*Discussion* George A. Works, Ed.D. Chicago

*Consistency Versus Chaos in Medical Education and Licensure*

Walter L. Biering M.D. Secretary The Federation of State Medical Boards of the United States Des Moines, Iowa.

*Discussion* James N. Baker M.D. Montgomery, Ala.

*The State University and Professional Education*

Arthur C. Willard S.B. LL.D. President University of Illinois Urbana

*Discussion* Eugene A. Gilmore LL.B. LL.D. Iowa City

Red Lacquer Room

MONDAY, FEBRUARY 17, 2 P. M.

MERRITTE W. IRELAND M.D. Presiding

*The Personality of the Teacher*

James S. McLester M.D. President American Medical Association Birmingham, Ala.

*Discussion* Charles F. Martin M.D. Montreal, Quebec.

*Scope and Objectives of the Undergraduate Teaching of Obstetrics*

George W. Kosmak M.D. New York.

Charles B. Reed M.D. Associate Professor of Obstetrics Northwestern University Medical School Chicago

Robert T. Riley M.D. Director State of Maryland Department of Health Baltimore

*Discussion* Fred L. Adair M.D., Chicago Paul Titus M.D. Pittsburgh Waller S. Leathers M.D. LL.D. Nashville

Red Lacquer Room

TUESDAY, FEBRUARY 18, 9 30 A. M.

REGINALD FITZ M.D. Presiding

*What Is the Social Objective of the Young Physician?*

Nathao B. Van Eiten M.D. Speaker House of Delegates American Medical Association New York.

*Discussion* Roscoe L. Senneker M.D. South Bend, Ind.

*Some Observations on the Social Background of Medical Practice in Great Britain*

Richard E. Scammon Ph.D., LL.D. Distinguished Service Professor in the Graduate Faculty of the University of Minnesota Minneapolis

*Discussion* Wilbur C. Davison M.D. Durham, N.C.

*Instruction of Students and Interns in the Legal, Social and Economic Influences Affecting Medical Practice*

Stanhope Bayne-Jones M.D. Dean Yale University School of Medicine New Haven, Conn.

*Discussion* Rev. Alphonse M. Schwitalla S.J., Ph.D. St. Louis

*Can the Present Medical Curriculum Achieve the Proper Aims of Medical Education?*

Langley Porter M.D. Deao University of California Medical School San Francisco

*Discussion* John Wyckoff M.D. New York.

Red Lacquer Room

TUESDAY, FEBRUARY 18, 2 P M

FRED MOORE, M.D., Presiding

*Suans Sing Before They Die*

Elias P. Lyon, M.D., LL.D., Dean, University of Minnesota Medical School, Minneapolis

*Function of the Hospital in the Training of Interns and Residents*

J. A. Curran, M.D., Executive Secretary, New York Committee on the Study of Hospital Internships and Residencies, New York

*Discussion* Harvey Agnew, M.D., Toronto, Ontario*The Laboratory of Pathology in the Small Hospital*

Howard T. Karsner, M.D., Professor of Pathology, Director of the Institute of Pathology, Western Reserve University and the University Hospitals, Cleveland

*Discussion* A. S. Giordano, M.D., South Bend, Ind.*Newer Points of View Concerning the Use of the Outpatient Department in Medical Education*

W. McKim Marriott, M.D., Dean, Washington University School of Medicine, St. Louis

*Discussion* Robert W. Keeton, M.D., Chicago

Red Lacquer Room

## THE FEDERATION OF STATE MEDICAL BOARDS OF THE UNITED STATES

TUESDAY, FEBRUARY 18, 9 30 A M

IRVIN D. METZGER, M.D., Presiding

*The Federation and the Survey of Medical Schools*

William D. Cutter, M.D., Secretary, Council on Medical Education and Hospitals, American Medical Association, Chicago

*The Two-Year Medical School*

George M. Williamson, M.D., Secretary, North Dakota State Board of Medical Examiners, Grand Forks

Benjamin J. Lawrence, M.D., Secretary, North Carolina Board of Medical Examiners, Raleigh

*Comments on National Board Examinations*

J. Stewart Rodman, M.D., Medical Secretary, National Board of Medical Examiners, Philadelphia

Everett S. Elwood, Executive Secretary, National Board of Medical Examiners, Philadelphia

*Final Objective*

Harold Rypins, M.D., Secretary, Board of Medical Examiners of the State of New York, Albany

*Discussion* John H. J. Upham, M.D., Columbus; Willard C. Rappleye, M.D., New York

Room Fourteen

TUESDAY, FEBRUARY 18, 1 30 P M

IRVIN D. METZGER, M.D., Presiding

*Narcotic Legislation*

William C. Woodward, M.D., LL.D., Director, Bureau of Legal Medicine, American Medical Association, Chicago

*Enforcement Procedure*

Thomas J. Crowe, M.D., Secretary, Texas State Board of Medical Examiners, Dallas

Herbert M. Platter, M.D., Secretary, Ohio State Medical Board, Columbus

*Aggressive Versus Passive Attitudes of State Board Members*

Arthur C. Morgan, M.D., Member, Pennsylvania State Board of Medical Education and Licensure, Philadelphia

*Foreign Medical Credentials*

Charles B. Pinkham, M.D., Secretary, California Board of Medical Examiners, San Francisco

*Experience with Basic Science Law in Nebraska*

Henry J. Lehnhoff, M.D., Secretary, Nebraska Board of Examiners in Medicine, Lincoln

*The Importance of Introducing Psychiatry as a Requirement for Licensure*

Franklin G. Ebaugh, M.D., Director, Division of Psychiatry Education, The National Committee for Mental Hygiene and Director, University of Colorado Psychopathic Hospital, Denver

*Discussion* John R. Neal, M.D., Springfield, Ill.; J. Earl McIntyre, M.D., Lansing, Mich.; Roy B. Harrison, M.D., New Orleans

## EXECUTIVE SESSION

Room Fourteen

## Federation Dinner

The annual dinner of the Federation of State Medical Boards of the United States will be held Monday, February 17 at 6 30 at the Palmer House. All attending the congress are invited.

## PROGRAM

*Address: The Responsibility of a University in Medical Training*

Eugene A. Gilmore, LL.B., LL.D., President, State University of Iowa, Iowa City

*Address: The Art of Medicine*

Irvin D. Metzger, M.D., President, The Federation of State Medical Boards of the United States, Pittsburgh

*Round Table Discussion—State Board Problems*

## Reduced Railway Fares

Reduced railway fares will be in effect for those who attend the congress. In some cases excursion rates are offered. In most instances the reduced rate will be on the certificate plan. Those planning to attend the congress should make inquiry of the railroad ticket agent before purchasing transportation to Chicago.

## JUDICIAL COUNCIL ACTION IN ROSS-LOOS CASE

Opinion and Decision of the Judicial Council of the American Medical Association in the Case of the Appeal of Dr. H. Clifford Loos and Dr. Donald Ross from the Decision of the Council of the California Medical Association Affirming the Action of the Los Angeles County Medical Association Expelling Said Members from Membership Therein

The authority of the Judicial Council in the appeal of Dr. Loos and Ross and similar cases is clearly outlined and delimited in the By-Laws of the American Medical Association, chapter IX, section 1, in the following words:

The judicial power of the Association shall be vested in the Judicial Council whose decision shall be final.

(c) between a member or members and the component society to which said member or members belong the Judicial Council shall have appellate jurisdiction in questions of law and procedure but not of fact.

The foregoing constitutional limitation on any review of the merits of a case therefore prevents the Judicial Council from expressing any opinion as to the guilt or innocence of the appellants in connection with any unethical practices alleged and charged against them.

Therefore the questions on which this council must render its decision are: 1. Were the appellants properly and lawfully apprised of and charged with an offense? 2. Were they properly and lawfully tried? and 3. Were the procedures fair, just and without material error?

The provisions for the disciplining of members appearing in the by-laws of the Los Angeles County Medical Association are as follows:

Article II, Section 5. Whenever a member of this Association is charged with a criminal offense or gross misconduct, either as a physician or a citizen, or is charged with the violation of any of the provisions of the Articles of Incorporation and By-Laws, he shall be notified by the Board of Councilors to appear before that body within ten days to show cause why he should not be censured, suspended or expelled. After a full hearing of the case, the Board of Councilors have power by a three-fourths vote to censure, suspend or expel the member without a written or verbal explanation of its reasons, such action to be effective only after a right to appeal to the Council of the California Medical Association is given the accused.

The record shows and no denial by either appellant or respondent is made that on a certain date the appellants were served with a notice to appear eleven days later before the council of the association to show cause why they should not be censured, suspended or expelled from membership. No statement of definite charges nor indication of the nature of any charges were contained in the summons. On receipt of the summons the appellants by telephone inquired from the secretary of the association what the nature of the inquiry would be, whether they should bring their books or witnesses and whether they should be attended by their attorney. As stated by the secretary,

The reply was in rough terms that the Council wanted to inquire into their relationship to advertising matter, particularly the circular that had just been circulated among the teachers of the Los Angeles County schools. He asked me if they should bring attorneys and I told him that usually the discussions before the Association were between members and the Council and he asked should we want their books or witnesses and I told him usually they were not brought but that he could do as he wished. My answers to him over the telephone were guided by an attempt to be as noncommittal and impersonal as I could.

Dr. Loos and Dr. Ross appeared as cited and a report by the association's medicolegal committee was read in which definite charges were made, supported by direct statement of the committee that the matters reported were true. Certain other matters were charged on the basis that "we are informed that." Dr. Loos and Dr. Ross denied all charges explaining each one and offered to bring legal evidence of the truth of their statements if the Council wished. A general discussion developed during which matters not contained in the medicolegal committee's report were included, after which Dr. Loos and Dr. Ross were excused. Following their retirement the council voted to expel Dr. Loos and Dr. Ross and also adopted the report of the medicolegal committee.

It is a fundamental principle of American jurisprudence (1) that a person shall be considered innocent until he has been proved guilty, (2) that an accused person shall know of what

he is accused, (3) that he shall have adequate opportunity to defend himself, (4) that he shall not be punished for an act not included in the charges against him, and (5) that he shall have a fair trial

Every one of the foregoing five principles was violated in the trial of this case before the council of the Los Angeles County Medical Association. There is nothing in the record of this case and nothing in the hearing before the Judicial Council showing that these men had been proved guilty of anything covered by the report of the medicolegal committee of the county association. No supporting evidence to that report was offered and so far as the record shows the committee on the one hand charged offenses and the appellants on the other denied them. The appellants at the time offered to submit proof of their denial, which later in fact they did in the form of sworn statements by officials of the organizations involved, which were presented in the appeal of the appellants to the California Medical Association. On the side of the Los Angeles County Medical Association was only circumstantial evidence sufficient to cause strong suspicion but insufficient to convict.

No indications of what the charges were appeared in the summons to appear and show cause. The appellants tried to learn from the proper officer, the secretary of the association what the charges were. Instead of informing them, if indeed he knew, since the report of the medicolegal committee which constituted the charges was not adopted by the Board of Councilors until after the hearing was held, the secretary himself testified that he answered the inquiry "in rough terms that the Council wanted to inquire into their relationship of advertising matter." He also testified that, in answer to the question as to whether the appellants should bring attorneys, "usually the discussions before the association were between members and the Council." He carefully evaded any appearance of there being a formal trial and avoided telling them of what they were charged. They were doubtless lulled by the appearance of informality and dissuaded thereby from bringing supporting evidence to any statement they might wish to make, by the absence of any charges in the summons and the evasiveness of the secretary in answering their inquiries as to the character of the charges. It is quite apparent that, whether guilty or not, they did not have a fair trial.

The by laws of the California Medical Association providing for the disciplining of the members of all its component county medical societies are as follows:

Chapter II Section 3. No member of a component county society shall be deprived of his membership unless by his own act except by a two-thirds affirmative vote of all the active members in good standing of the component county society to which he belongs present and voting at a regular meeting thereof or by a two-thirds vote of its council or board of directors present and voting at a regular meeting thereof and only after at least six weeks written notice personally delivered to the member has been served upon him fully stating the charges against him, and only after such member shall have been given full opportunity to be heard in his own defense at such meeting.

The by law of the California Medical Association is explicit, fair and just and does not offend the principle of proper protection of the rights of membership in the county, state and national organizations. The similar by-law of the Los Angeles County Medical Association on the contrary is vague, unfair and arbitrary and fails to give adequate protection to every member of that society. At any time a small group of members having obtained positions of authority may use such authority against any member said group elects to prosecute or persecute and the member has only the protection of a time-consuming, expensive appeal to the Council of the state association or the Judicial Council of the American Medical Association.

The California Medical Association is the creative and authoritative body over the Los Angeles County Medical Association. The county medical association is a unit in organized medicine because of the charter granted it by the said state association. Therefore a by-law of the county society inconsistent and in conflict with a similar one of the state association is null and void. The by-law of the California Medical Association previously quoted provides that 'no member of a component society' shall be deprived of his membership except as provided therein. This covers the membership of the Los

Angeles County Medical Association as well as the membership of every other component society.

It is admitted by the respondents that the whole procedure in the Los Angeles County Medical Association was irregular and prejudicial to the interests of the appellants and that they were entitled to the protection of the by-law of the state association, but that by answering the summons, attending the meeting as directed and defending themselves against the report of the medicolegal committee they waived those rights provided by the state association by-law. The Judicial Council is not impressed by this argument. The record shows that several times previous to this action the appellants had been called before the society's representatives for discussion and explanation of their operations, that at no previous time had such formal notice been given and therefore an effort was made to learn from the proper officer what matter would be brought up, in order to be properly prepared, that the appellants were lulled by that officer's evasiveness, that because of that evasiveness they were not prepared to present denial supported by legal evidence but that they offered to obtain such evidence, that in fact they did produce such sworn evidence before the council of the state association later on. If a claim of waiver is to be made, it is the obligation of the party making the claim to show that there was an intent to waive. Such an intent cannot be assumed simply because an accused cited to appear does so appear and make general denial, and especially if the accused offers to produce further evidence by witnesses not then available to support the denials.

For the following briefly summarized reasons, viz:

(a) The appellants were brought to trial with no definite knowledge of what they were charged,

(b) They had no adequate opportunity to defend themselves

(c) They were expelled for some unknown act not appearing in the charges, and

(d) They did not have a fair trial,

which appear in full in the foregoing analysis, the Judicial Council supports the appeal of Dr. H. Clifford Loos and Dr. Donald Ross from the decision of the Council of the California Medical Association, which affirmed the action of the Los Angeles County Medical Association expelling said physicians from membership therein.

GEORGE EDWARD FOLLANSBEE

WALTER F. DONALDSON

LLOYD NOLAN

JOHN H. O'SHEA

Jan 2, 1936

## RADIO BROADCASTS

The American Medical Association broadcasts over WEAJ the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

**Red Network**—The stations on the Red network of the National Broadcasting Company are WEAJ, WEEL, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAL, WTAM, WWJ, WMAQ, KSD, WHO, WOV, WDAF.

**Pacific Network**—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

January 28 Health of the Traveler W. W. Bauer M.D.

February 4 Pneumonia W. W. Bauer M.D.

February 11 Little Tips on Home Hygiene W. W. Bauer M.D.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### CALIFORNIA

**Dr Carrel Appointed Professor for a Semester**—Dr Alexis Carrel of the Rockefeller Institute for Medical Research, New York, has been appointed Hitchcock professor at the University of California, Berkeley, for the spring semester. The Hitchcock professorship was established by a fund started in 1872 to provide "free lectures on the campus upon scientific and practical subjects but not for the advantage of any religious sect nor upon political subjects."

**Personal**—Dr Edwin S. Bennett has been appointed medical director of Olive View Sanatorium, succeeding the late Dr William H. Bucher. Dr John M. Scanland, medical superintendent, Agnew State Hospital, Agnew, has been appointed superintendent of the Napa State Hospital, Imola, succeeding the late Dr Carl A. Johnson. Dr Scanland was named superintendent of the institution for the first time in 1922 when he came from Montana to California, but resigned in 1925 to enter private practice.

**Society News**—At a meeting of the Alameda County Medical Association in Oakland, January 20, speakers were Drs William O. Solomon on 'Lipoma of the Broad Ligament' with case report, John A. Dougherty, 'Ureteral Obstruction', and Roy F. Nelson, 'Bronchoscopy for the Obstetrician'. Dr Paul P. E. Michael presented pathologic material. At a meeting of the San Diego County Medical Society, January 14, in San Diego, speakers were Drs Frederick C. Warnshuis, San Francisco, Robert A. Peers, Colfax, and Edward M. Pallette, Los Angeles, secretary, president and president-elect, respectively, of the California Medical Association.

### COLORADO

**County Society Changes Name**—The Kit Carson County Medical Society has changed its name to Eastern Colorado Medical Society, effective January 1. The change was made because the Kit Carson County Medical Society includes three counties: Kit Carson, Cheyenne and Lincoln, these being the three east-central counties of the state.

### CONNECTICUT

**In Memory of Professor Mendel**—The December issue of *Health*, the monthly bulletin of the New Haven Department of Health, was dedicated to the memory of Lafayette B. Mendel, Ph.D., who, at the time of his death, Dec. 9, 1935, was Sterling professor of physiologic chemistry at Yale University School of Medicine, New Haven.

**Society News**—Dr Maurice Brodie, New York, discussed "Treatment and Prevention of Poliomyelitis" before the Waterbury Medical Association in Waterbury, December 12. Dr Cyril N. H. Long, Philadelphia, addressed the Yale Medical Society in New Haven, December 11, on 'Effects of Hypophysectomy and Adrenalectomy upon Experimental Diabetes'.

### DISTRICT OF COLUMBIA

**Medical Bills in Congress**—Changes in Status. S. 1016 has passed the House, empowering the health officer of the District of Columbia to authorize the opening of graves and the disinterment and reinterment of dead bodies in cases in which death has resulted from certain contagious diseases. S. 2013 has passed the House, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr Pak Chue Chan. S. 2939 has passed the House, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr Roland A. Cox. S. 3284 has passed the Senate, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr Dexter P. Reynolds. H. R. 8437 has passed the House, directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr Arthur B. Walker.

### ILLINOIS

**Communicable Diseases in Rural Population**—The mortality rate from typhoid, measles, whooping cough and malaria was twice as great among the rural as among the urban population of Illinois in 1934, according to the state department of public health. These diseases gave an aggregate death rate of 14.6 for rural and 7.1 for urban population. The death rate among rural citizens for scarlet fever, diphtheria, tuberculosis and infantile diarrhea ranged from 25 to 40 per cent higher than among the city population, giving an aggregate mortality rate of 84.9 per hundred thousand for the rural population and 60.6 for urban population. Pneumonia, according to the study, was the only infectious disease which caused a higher mortality rate among those in urban than among those in rural districts, giving a death rate, respectively, of 72.8 and 65.5 per hundred thousand of population.

### Chicago

**Society News**—Dr Albert H. Freiberg, Cincinnati, was the guest speaker before the Chicago Medical Society, January 22, he discussed "Sciatic Pain." The society held a memorial meeting, January 19, at Murphy Memorial Hall. The Chicago Society of Allergy was addressed, January 20, by A. G. Wedum, Ph.D., on "Specificity of Immunological Reactions as Illustrated by Studies of Chemoproteins," and Dr Michael Zeller, "Leukopenic Index in Allergic Individuals." Dr Francis Park Lewis, Buffalo, discussed "The Evolution of Ophthalmology in the Past Century" at a meeting of the Chicago Ophthalmological Society, January 20. Speakers before the Chicago Pediatric Society, January 21, were Drs Abraham B. Schwartz, Milwaukee, "Rational Treatment for Abnormally Attached Frenum Labium," William H. G. Logan, "Indications for Surgical Treatment of Cleft Palate and Cleft Lip" and Thomas L. Grisamore, D.D.S., "Primary and Major Indications for Orthodontia."

**Dr Geiling Named Professor of Pharmacology**—Dr Eugene M. Karl Geiling, associate professor of pharmacology and experimental therapeutics, Johns Hopkins University School of Medicine, Baltimore, has been appointed professor of pharmacology and head of a newly created department of pharmacology at the University of Chicago. Pharmacology was formerly included in the department of physiologic chemistry and pharmacology. Under the new arrangement it becomes a separate department, and the older department, of which Prof. Fred C. Koch is chairman, has been renamed the department of biochemistry. Dr Geiling is 44 years of age and a native of South Africa. He received his degree of doctor of philosophy from the University of Illinois in 1917 and his medical degree from Johns Hopkins in 1923. In the same year he was appointed assistant in pharmacology at his alma mater. He has been associate professor since 1925. In 1932-1933 he was chairman of the Section on Pharmacology and Therapeutics of the American Medical Association. Dr Geiling's research has dealt with physiologic chemistry, nutritive value of amino acids, blood regeneration, pharmacology, chemistry, function and interrelation of endocrines and the pharmacologic action of protein split products and albumoses.

### INDIANA

**Secretaries' Conference**—The annual conference of the county society secretaries of the Indiana State Medical Association will be held at the Columbia Club, Indianapolis, February 2. The speakers will include

Mr. Ross Garrett, Washington, D. C., The Washington Plan.  
Dr. Oliver O. Alexander, Terre Haute, Medical Ethics in Everyday Practice.  
Dr. Franklin S. Crockett, Lafayette, Work of the Liaison Committee with the Township Trustees.  
Dr. Lyman T. Rawles, Fort Wayne, The Local Societies and High School Debates.  
Dr. Frederick E. Elliott, Brooklyn, New Deal Exploitation of Medical Practice.  
Dr. Albert S. McCown, Washington, D. C., Indiana's Program in Maternal and Child Welfare Under the Social Security Act.  
Dr. Cyrus J. Clark, Indianapolis, Graduate Education Program.  
Dr. Verne K. Harvey, Indianapolis, Policies of the State Division of Public Health.  
Dr. Eldridge M. Shanklin, Hammond, Your State Medical Journal.  
Dr. Edward A. Meyerding, St. Paul, Relation of the Individual Physician to the County and the State Medical Societies.  
Dr. Olin West, Chicago, Today's Medical Economic Problems and the County Society.

In addition, Drs. Roscoe L. Sensemich, South Bend, and Edmund D. Clark, Indianapolis, president and president-elect, Indiana State Medical Association respectively, will speak. Dr. Albert M. Mitchell, Terre Haute, will preside.

**Society News**—At a meeting of the Indianapolis Medical Society, January 28, Dr. Albert Murray DeArmond will discuss alcohol, Dr. Paul G. Iske, morphine, and Dr. William M.

Dugan, tobacco—The LaPorte County Medical Society was addressed in Michigan City, December 19, by Dr. Eric Oldberg, Chicago, on "Fractures of the Spine"—Dr. Matthew Winters, Indianapolis, discussed "Vomiting in Children" before the Tipton County Medical Society in Tipton December 19.—At a meeting of the Marshall County Medical Society in Plymouth, December 4, Dr. Raymond W. Spenner, South Bend, discussed "Hypertensive Heart Disease"—Dr. Homer H. Wheeler, Indianapolis, addressed the Fayette-Franklin Medical Society in Connersville, December 10, on "Diseases of the Rectum"—At a meeting of the Jay County Medical Society in Portland, December 6, Dr. Harvey L. Murdock and Dr. Bonnelle W. Rhany, Fort Wayne, discussed undulant fever.—Dr. Robert B. Sanderson, South Bend addressed the St. Joseph County Medical Society in South Bend, November 12, on "Diagnosis and Treatment of Pulmonary Tuberculosis"—At a meeting of the Northeastern Indiana Academy of Medicine in Kendallville, December 19, speakers were Drs. Bruce K. Wiseman, Columbus on "Differential Diagnosis and Treatment of Blood Diseases Characterized by Enlargement of the Spleen," and Edmund M. Van Buskirk, Fort Wayne, "X-Ray Study of the Heart Shadow"—Dr. Louis G. Herrmann, Cincinnati, discussed "Recent Advances in the Diagnosis and Treatment of Peripheral Vascular Disease" before the Fort Wayne Medical Society, December 17.

### KANSAS

Personal—Dr. Alexander C. Flack, Fredonia, was guest of honor at a dinner given recently by the Wilson County Medical Society in observance of his completion of fifty years in the practice of medicine.—Dr. John Clifton, Vermillion, has been appointed health officer of Marshall County, succeeding Dr. Charles E. Gaston, Frankfort, resigned.—Dr. Karl Menninger, Topeka, has recently been made one of the editors of the *International Journal of Psycho-Analysis*.

Courses in Mental Hygiene—The Shawnee County Mental Hygiene Society recently sponsored a course in mental hygiene, with Drs. Karl A. Menninger, Robert P. Knight and Nathan W. Ackerman as lecturers. Following is the list of topics: November 4, 1935, "Definition and History of the Mental Hygiene Movement", November 11, "Psychodynamics of Normal Child Development", November 18, "Problem Children", November 25, "Juvenile Delinquency", December 2, "Mental Hygiene of Adolescence", December 9, "Marital Relationships", January 6, "Early Manifestations of Common Mental Illnesses". A summation of the course was presented January 13.

### KENTUCKY

Society News—Dr. George W. Payne, Bardwell, addressed a joint meeting of the Carlisle Ballard and Hickman county medical societies in Wickliffe, December 3, on the barbiturates.—Dr. Emmet F. Horine, Louisville, addressed the Madison County Medical Society, Richmond, December 19, on "Practical Management of Cardiovascular Emergencies"—Dr. Chevalier L. Jackson, Philadelphia, addressed the Jefferson County Medical Society, Louisville, January 20 on Bronchoscopy as an Aid in Diagnosis.

### MARYLAND

New Chief of Bureau—Arthur W. Hedrich, Sc.D., associate in biostatistics, Johns Hopkins University School of Hygiene and Public Health, Baltimore, has been appointed chief of the bureau of vital statistics of the Maryland State Department of Health. Dr. Hedrich is at present on a leave of absence from the university being attached to the U. S. Public Health Service as director of the Chicago district in the survey of chronic disease. Drs. George E. Bennett and Joseph Earle Moore, both of Baltimore, have been named consultants in the department.

Health in Baltimore—In 1935 the same general death rate as in the previous year, 133 per thousand of population was maintained in Baltimore. Of the communicable diseases, diphtheria was the most prevalent in 1935, 5,755 cases having been reported according to provisional figures. Meningococcal meningitis increased, with 182 cases and seventy-two deaths as compared with ten cases and four deaths in 1934. This is the first time since records have been kept for this disease with the exception of the war years 1917 and 1918 that there have been more than twenty cases. A new low record for deaths from diphtheria was achieved, 119 cases were reported as compared with 103 in 1934, two deaths occurred among residents of Baltimore. No diphtheria death occurred during the year until October 13 when the death of a child was the first reported in a resident one year and sixteen days after the last reported

death. The five principal causes of deaths in Baltimore were the same as in 1934 with 60 per cent of all deaths attributed to them: heart disease, cancer, pneumonia, chronic nephritis and tuberculosis. The infant mortality rate in 1935 was 55.9 per thousand live births as against 65.2 for the previous year. Deaths from automobile accidents declined from 225 in 1934 to 198 in 1935.

### MASSACHUSETTS

Personal—Dr. Tracy Putnam, professor of neurology, Harvard Medical School, Boston, delivered the second annual Block Memorial Lecture of the Fulton County Medical Society at the Academy of Medicine in Atlanta, January 23, on "The Cerebral Circulation and Its Disorders".

Activities of Society for Mental Hygiene—The Massachusetts Society for Mental Hygiene is holding a conference on mental health in education at the Parker House, Boston, January 25, in cooperation with the Massachusetts Teachers' Federation. A survey of the social, health and educational agencies of Springfield began, January 13, at the request of the Council of Social Agencies and the Community Chest of Springfield. After the Springfield survey, Dr. Henry B. Elkind, Boston, medical director of the Massachusetts society, will conduct a survey of the work of the Illinois Society for Mental Hygiene, at the request of the National Committee for Mental Hygiene. Dr. Donald Gregg, Wellesley, was chosen president of the Massachusetts Society for Mental Hygiene at its annual meeting, Nov. 20, 1935.

### MICHIGAN

Campaign Against Pneumonia.—Funds have been made available by the Common Council of Detroit to continue this winter the campaign against pneumonia which was inaugurated last year. The funds provide types I, II and VII antipneumonia serum for pneumonia patients afflicted with these types in hospitals where adequate laboratory service and nursing care are available, when it is a financial hardship for the patient to procure the serum. Physicians who have cases of pneumonia are urged to send at once to the health department's laboratory a fresh specimen of sputum for determination of the type of pneumococcus present. Special physicians at hospitals will be able to secure the proper serum.

Annual Report of Children's Fund—A total of \$567,888.30 was expended by the Children's Fund of Michigan during the past fiscal year to finance its work in emergency relief, public health, child guidance, medical research and child dependence. According to the sixth annual report, 450,000 children received some sort of service. The largest portion of expenditures, \$280,000, was in the field of child health, most of which was carried on in the northern part of the state. A general inspection of all children in Detroit public and parochial schools which was part of the general dental program, revealed that 30 per cent did not need dental service, a very high percentage it is believed.

With the employment of one health educator a small part of the health education program abandoned in 1933 was revived. The report points out that the project in Muskegon County of boarding delinquent children in private families rather than sending them to state correctional institutions continues interesting. It is believed that the reform of many children may be accomplished without the damaging experiences in institutions. Special studies were conducted on the growth problems of well infants in addition to various other lines of research. Green Pastures at Little Pleasant Lake in Jackson County for Negro children was operated at full capacity during twelve weeks of the summer of 1934 by the Detroit Urban League. In addition, the special education department of the Detroit Public Schools used the camp during June, sending 100 problem boys there. The program to correct visual defects was continued. Two ophthalmologists were sent into twelve counties and the Otter Lake Billet of the American Legion to supply glasses to children who needed them. So successful has been the Northern Children's Clinic at Marquette now in its fourth year, that a similar clinic will be established this year at Traverse City and a new children's clinic planned after the ambulatory clinic connected with the St. Luke's Hospital at Marquette will be erected.

Senator Couzens, who established the Children's Fund with an endowment of \$10,000,000, has given an additional \$2,156,675.89 with no stipulations other than those contained in the original trust instrument of April 1929 which created the fund to promote the health, welfare, happiness and development of the children in the State of Michigan primarily and elsewhere in the world. It is the intention of the donor that by May 1, 1954 the entire sum be spent for the purposes for



which it was created. All projects which come under the headings of public health, material relief, preventive medicine, dentistry, research, mental hygiene, education and recreation will be assured of continued interest, it was stated.

### MINNESOTA

**Operator of "Rest Home" Sentenced**—Della Mostert, 56 years of age, following her plea of guilty to a charge of performing an abortion, was sentenced to a term not to exceed four years at hard labor at the Woman's Reformatory at Shakopee. Mrs. Mostert, who has been working as a practical nurse and operating a rest home, admitted to the judge that she had been engaged in this illegal work for the past seven or eight years. In the present case the girl died thirty-six hours after the abortion was performed and the cause was given as gas bacillus infection. Mrs. Mostert was given the opportunity of pleading guilty to the charge of abortion rather than being tried on the charge of manslaughter.

### NEBRASKA

**Society News**—Two meetings of the Fifth Councilor District Medical Society were held in December. At Fremont, December 16, speakers were Drs. Rodney W. Bliss and Joseph A. Weinberg, Omaha, on "Radiosensitivity to Thoracic and Other Tumors" and "Surgical Problems Concerning the Thorax," respectively. At Columbus, December 12, Drs. Charles Fred Ferciot and James E. M. Thomson, Lincoln, spoke on "Diagnosis and Treatment of Injuries to the Knee" and "Fractures of the Forearm," respectively. Mr. M. C. Smith, executive secretary of the Nebraska State Medical Association, addressed both meetings on "Fellowship in the Practice of Medicine."—Drs. George W. Ainlay, Fairbury, and Weaver A. Rush, Beatrice, addressed a joint meeting of the Jefferson and Thayer county medical societies in Hebron, December 13, on diabetes and use of the x-rays in diagnosis of gastrointestinal diseases, respectively.—Dr. George W. Covey, Lincoln, gave an address on coronary occlusion before the Gage County Medical Society, December 4.

### NEW JERSEY

**Society News**—Dr. Frank C. Yeomans, New York, addressed the Academy of Medicine of Northern New Jersey, Newark, January 16, on "Ulcerative Colitis, Diverticulitis and Cancer."—Dr. Garfield G. Duncan, Philadelphia, addressed the Gloucester County Medical Society, Woodbury, December 19, on "Diet in the Management of Diabetes and Obesity."—Dr. Morris Fishbein, Chicago, editor of THE JOURNAL, will address the Middlesex County Medical Society, January 29, at "The Pines," between New Brunswick and Metuchen.—Dr. Charles Gordon Heyd, New York, addressed the Morris County Medical Society at the state hospital at Greystone Park, December 19, on "Goiter—Diagnosis and Therapeutic Indications."—Dr. Frederic E. Elliott, New York, addressed the Essex County Medical Society, Newark, January 9, on "Current Problems in Medical Economics."—Dr. William Wayne Babcock, Philadelphia, addressed the Atlantic County Medical Society, Atlantic City, January 10, on "Advances in Management of Abdominal Malignancy."—Dr. David D. Berlin, Boston, addressed the Bergen County Medical Society, Hackensack, January 14, on "Surgical Treatment of Heart Disease."

### NEW YORK

**Tenth Anniversary of Medical School**—The tenth anniversary of the opening of the University of Rochester School of Medicine and Dentistry, Strong Memorial Hospital and the School of Nursing was celebrated with a special program, January 9-10. Ten years of medical progress was reviewed in seminar sessions, general scientific meetings and demonstrations of research in progress. Dr. Elliott P. Joslin, Boston, delivered the Eastman Memorial Lecture on the evening of January 10, on "Diabetes of Today and Tomorrow."

### New York City

**Funds for Hospitals**—The United Hospital Fund raised \$1,852,821 in a campaign begun November 18, it was announced at a report meeting January 10. The public phase of the drive ended at that time, but solicitation among industries was to be continued in the hope of reaching the goal of \$2,000,000.

**Society News**—At a meeting of the National Society for the Advancement of Gastro-Enterology, January 28, speakers will be Drs. James S. McLester, Birmingham, Ala., President of the American Medical Association on "Deficiency Diseases

as We See Them in America", Charles L. Hartsock, Cleveland, "The Deficiency Factor in the Treatment of Chronic Gastro-Intestinal Diseases," and M. E. Binet, Vichy, France, "Statistical Studies on 3,000 Cases of Chronic Angiocholcystitis."

**Silver Anniversary**—The New York League for the Hard of Hearing celebrated the twenty-fifth anniversary of its founding at a "Silver Anniversary Dinner," January 3. Dr. Ebenezer Ross Faulkner was toastmaster and speakers were Dr. Austin A. Hayden, Chicago, Dr. Frederick N. Sperry, New Haven, Conn., Lewis Wilson, Sc.D., Ida M. Tarbell, Annetta W. Peck, executive secretary of the league, John L. Elliott, Ph.D., and Mr. Leo Stein, president of the league. The league was founded Jan. 3, 1911, by Edward B. Nitchie, a teacher of lip reading. It has grown from a membership of about sixty to nearly 500.

**Medical Service Among Those on Relief**—The medical and nursing service of the Emergency Relief Bureau of New York City arranged medical attention for 169,573 families on home relief in 1935, compared with 30,082 in 1933, according to the annual report of the executive director. Physicians made 422,370 visits and nurses 47,484. The cost of this care was placed at \$1,130,271.84. The average cost for each case in 1935 was \$6.66. The relief medical service maintains a list of 4,000 physicians, among whom cases are rotated, patients may choose their own physician, provided the number of calls for any one physician does not exceed the average number assigned to others in the vicinity and provided the requested physician is registered with the service. Illnesses treated in the home must be of comparatively short duration. Contagious diseases without complications and maternity cases in which conditions are normal are handled in homes. No form of surgery is performed in the patient's home.

**Examination for Health Education Position**—The Municipal Civil Service Commission announces an examination for the position of assistant director of the bureau of health education in the New York City Department of Health. It will be the task of the assistant director to publicize and assist in the development of a public health education program in district health centers and to assist the director in administrative direction of the bureau. Applicants must be graduates of recognized medical schools and must have had at least three years' experience in the planning and execution of a popular health education program and literary or editorial experience. Lacking a medical degree, exceptional experience of five years of the type described will be accepted. The examination is open to all citizens of the United States, but the appointee must thereafter live in New York. The salary is \$5,500 a year. It is preferred that candidates be between 30 and 44 years old. Application blanks may be obtained from Room 1400, Municipal Building. Applications will be received until February 11.

### OREGON

**Society News**—The annual meeting of the Alumni Association of the University of Oregon Medical School will be held at the university, March 2-4, with Dr. Thomas R. Brown, associate professor of medicine, Johns Hopkins University School of Medicine, Baltimore, as guest speaker. Clinics will be held each morning at the Multnomah County Hospital and lectures presented each afternoon at the Medical-Dental Auditorium.—Dr. John R. Montague addressed the Multnomah County Medical Society, Portland, December 4, on "Metabolic Studies in a Man with a Shortened Intestine." Dr. James Tate Mason, Seattle, President-Elect, American Medical Association, gave an address at the society's annual banquet, Portland, December 18.

### PENNSYLVANIA

**Society News**—A symposium on peripheral vascular diseases was presented at the December meeting of the Dauphin County Medical Society, Harrisburg by Drs. Henry R. Douglas Jr., Alfred H. Simmons and John A. Daugherty.

### Philadelphia

**Society News**—A symposium on medical economics formed the program of the Philadelphia County Medical Society, January 22, speakers were Drs. Roscoe G. Leland, Chicago, executive director, Bureau of Medical Economics, American Medical Association, Francis F. Borzell, Philadelphia, chairman of the committee on medical economics of the state medical society and Joseph W. Post, chairman of the commission on medical and economics of the Philadelphia county society.—Speakers at a meeting of the Philadelphia Academy of Surgery, January 13, were Drs. Gabriel Tucker, on "Gastroscopy as an Aid in

Diagnosis and Foreign Body Removal," and Robert H. Ivy and Lawrence Curtis, "Adamantinoma of the Jaws"—Dr. Samuel Goldberg and Samuel L. Greenfield, among others, addressed the Philadelphia Pediatric Society, January 14, on "Suppurative Arthritis Complicating Meningitis"

## SOUTH CAROLINA

**Society News**—At the annual New Year's meeting and banquet of the Marlboro County Medical Society, Bennettsville, January 10, speakers were Drs. Edgar A. Hines, Seneca, secretary of the South Carolina Medical Association, on "The New Year and the Doctor", William R. Barron, Columbia, "Submucous Fibrosis in the Urinary Bladder", Roy B. McKnight, Charlotte, N. C., "Riedel's Thyroiditis," and, following the banquet, Dr. Warren T. Vaughan, Richmond, Va., "Newer Methods in the Study and Treatment of Food Allergy"

## TENNESSEE

**Public Health Conference**—The annual conference of public health workers will be held in Nashville, January 30 to February 1. Among physicians who will appear on the program are

- Dr. James P. Leake, U. S. Public Health Service, Washington, D. C., "Our Current Knowledge of Poliomyelitis: Futile Gestures versus Sound Procedures in Communicable Disease Control"
- Dr. Allen W. Freeman, dean, School of Hygiene and Public Health, Johns Hopkins University, Baltimore, "Specific Objectives in a Rural Health Program: Accepted Policies in the Administration of a County Health Department"
- Dr. Waller S. Leathers, dean, Vanderbilt University School of Medicine, Nashville, "Present Trends in Education of Public Health Workers"
- Dr. Horton R. Casparis, professor of pediatrics, Vanderbilt, "Physical Examination of the Preschool and School Child"

## WISCONSIN

**Society News**—A symposium on cancer was presented at the meeting of the Milwaukee County Medical Society, January 10, speakers were Drs. Francis B. McMahon, on cancer of the lip and tongue, Maurice J. Reuter, the skin, Marcell E. Gabor, the stomach, Carl Henry Davis, the uterus, Stanley J. Seeger, the colon and rectum, John S. Gordon, the nose and throat, William C. F. Witte, the breast, and Walter M. Kearns, urologic cancers—Dr. Robert R. Irwin, Wauwatosa, addressed the Fond du Lac County Medical Society, Fond du Lac, December 18, on diseases of the prostate gland.

**Veteran Physicians Honored**—Seven Wisconsin physicians who have practiced more than forty years were honored at a banquet at Rice Lake, December 3, by medical and other friends. They were Drs. Clark C. Post, Barron, William G. Malcolm, Chetek, Olaf M. Sattre and Edgar J. Knapp, Rice Lake, Walter A. Hazelton, Hayward, Horace G. Hillard, Minong, and Harry H. Ainsworth, Birchwood—Dr. Isaac N. McComb, who has practiced at Brillhon more than fifty years, was guest of honor at a dinner given by physicians of Outagamie, Calumet and Manitowoc counties in Manitowoc, December 11. The dinner was arranged by the Calumet County Medical Society—A dinner was given in honor of Dr. LeRoy Abbott, Wilton, November 23, under the auspices of the Monroe County Medical Society, to observe his completion of fifty years of practice—Dr. George A. Ritchie, Appleton, was honored at a dinner given by the Outagamie County Medical Society in Appleton, December 12, celebrating his fiftieth anniversary of medical practice.

## PUERTO RICO

**Annual Medical Meeting and Election**—Dr. Manuel Pavia Fernandez, San Juan, was elected president of the Puerto Rico Medical Association at the annual meeting in San Juan, December 13-15. Dr. Jesus M. Armaiz Vega Baja, was elected vice president and Dr. Euripides Silva, San Juan, reelected secretary. Dr. James S. McLester, Birmingham, Ala., President, American Medical Association, attended the meeting giving addresses on the work of the American Medical Association and on "The Borderline States of Nutritional Insufficiencies." Other guests were Drs. Arthur C. Morgan, Philadelphia, who spoke on "Applied Therapeutics," Acute Tragedies and "Chest Signs in Pneumonia and in Pulmonary Tuberculosis," David Seegal, New York, "The Accuracy of Major Clinical Diagnosis as Compared with Autopsy Findings," and J. Raymond Lutz, New York, "Chronic Catarrhal Colitis." Dr. McLester was the guest of honor at a reception at the home of Dr. Esteban Garcia Cabrera, and Dr. Morgan was entertained by the Puerto Rico chapter of the alumni association of the University of Pennsylvania.

## GENERAL

**Society News**—Dr. Thomas G. Orr, Kansas City, Mo., was elected president of the Western Surgical Association at its recent annual meeting in Rochester, Minn.—The Mid-South Post Graduate Medical Assembly will be held in Memphis, Tenn., February 11-14—Dr. Harvey B. Stone, Baltimore, was elected president of the Southern Surgical Association at Hot Springs, Va., December 10-12, Drs. Fred W. Rankin, Lexington, Ky., and Edwin P. Lehman, University, Va., were elected vice presidents and Dr. Edward William Alton Ochsner, New Orleans, was reelected secretary. The 1936 meeting will be in Biloxi, Miss.—The annual meeting of the Academy of Physical Medicine will be held in Boston in October. Dr. Franklin P. Lowry, Newton, Mass., was recently elected secretary to fill the unexpired term of the late Dr. Arthur H. Ring, Arlington.—The Tri-State Hospital Assembly will be held at the Hotel Sherman, Chicago, May 6-8. The assembly is composed of the hospital associations of Illinois, Indiana and Wisconsin.—The annual convention of the American Dietetic Association will be held in Boston, October 11-16, at the Statler Hotel.

**Annual Report of Commonwealth Fund**—More than two thirds of \$1,574,025.07 appropriated by the Commonwealth Fund for the year ended Sept. 30, 1935, was devoted to the promotion of health and medical service, according to the annual report. After several years of intensive development of rural health service in Tennessee, Massachusetts and Mississippi and isolated activities of a similar sort in Oregon, North Dakota, Georgia, Maine, Kentucky and New Mexico, the conclusion has been reached that to enlarge the size and improve the standards of rural health departments beyond the point which they have generally reached is practicable. The fund believes a rural health department "should be organized on a countywide basis." About 14 per cent of the fund's gifts were in the field of mental hygiene, in this country primarily for the promotion of training for psychiatry and psychiatric social work. At three teaching hospitals provision was made for the addition of psychiatric or psychologic service to children's clinics as a step toward more accurate diagnosis and better treatment of common disorders which arise from emotional as well as physical causes. In England the fund continued to meet most of the costs of a child guidance clinic in London, a training course for mental health workers at the London School of Economics, and a central office for information about child guidance and psychiatric social work. During the year a new general community hospital, the seventh in this group, was opened at Kingsport, Tenn., under the plan by which the fund finances the greater part of the building and equipment costs and the community agrees to maintain a standard hospital serving patients regardless of status, and doing a certain amount of free work. Plans are now being drawn for another such hospital at Tupelo, Miss., where a local quota of \$40,000 has already been raised, and it is expected that the fund will shortly announce the selection of the ninth community to which such aid will be given. In addition, the fund aided medical research and awarded fellowships to worthy students.

**Medical Bills in Congress—Bills Introduced** S 3545, introduced by Senator Capper, Kansas, proposes to provide for the relief of officers and soldiers of the volunteer service of the United States, mustered into service for the war with Spain who were held in service in the Philippine Islands after the ratification of the treaty of peace, April 11, 1899. S 3693, introduced by Senator Carey, Wyoming, proposes that for the purpose of promotion there shall be credited to officers of the Medical Corps all active service as officers of the Medical Reserve Corps rendered by them between April 23, 1903, and April 6, 1917. S 3728, introduced by Senator Black, Alabama, proposes to increase the lump sum payment made under the United States Employees Compensation Act in cases of death or of permanent total or permanent partial disability suffered prior to Feb. 12, 1927. H J Res 449, introduced by Representative Marcantonio, New York, proposes to authorize the Secretary of Labor to appoint a board to ascertain the facts relating to health conditions of workers employed in the construction and maintenance of public utilities," with particular reference to the prevalence of silicosis among employees on a tunnel project at Gauley Bridge, West Virginia. H R 9937, introduced by Representative Terry, Arkansas, proposes to authorize the President to award the Congressional Medal of Honor to Dr. Samuel G. Boyce, "who, during the World War in action involving actual conflict with the enemy, distinguished himself conspicuously by gallantry and intrepidity, at the risk of his life, above and beyond the call of duty." H R 10122, introduced by Representative Craven, Arkansas, proposes to

amend the Social Security Act so as to increase the sum to be paid by the United States to the aged H R 10124, introduced by Representative Kennedy, New York, proposes to prevent the adulteration, misbranding and false advertising of food, drugs, devices and cosmetics in interstate, foreign and other commerce subject to the jurisdiction of the United States H R 10130, introduced by Representative Taylor, Tennessee, proposes to refund to veterans of the Spanish-American War, including the Boxer Rebellion and the Philippine Insurrection, their widows and dependents, the amounts of which they were deprived by the Economy Act H R 10132, introduced by Representative Thomason, Texas, proposes to authorize the appropriation of one million dollars a year for the United States Public Health Service "to establish public health protection along the international boundary between the United States of America and the Republic of Mexico" H R. 10270, introduced by Representative Doxey, Mississippi, proposes to provide that the minimum pension rate for totally and permanently disabled World War veterans shall be the same as for the Spanish-American War veterans H R. 10322, introduced by Representative Pierce, Oregon, proposes to provide that certain benefits to which veterans of the Spanish-American War are entitled shall be extended to all veterans who served ninety days, in foreign service, under the jurisdiction of the "Quartermaster General, Surgeon General, of the United States Army, the Secretary of the Navy, or Marine Corps, during the Spanish-American War, including the Philippine Insurrection and the Chinese Boxer Rebellion"

### FOREIGN

**Course by Dr Portmann.**—An intensive five weeks course in otolaryngology will be given by Dr Georges Portmann, professor of otolaryngology, at the University of Bordeaux, France, beginning July 30. The course, which will include didactic, laboratory, clinical and operative instruction, will be in English. For further information address Dr James A Flynn, 1511 Rhode Island Avenue NW, Washington, D C.

**Commission on Nutrition.**—At the September meeting of the Assembly of the League of Nations an expert commission on nutrition was appointed as a result of a three-day discussion of the problem of nutrition in relation to the public health in which Australia's delegates demanded an inquiry to obtain facts on which adequate schemes of nutrition may be based. The commission held its first meeting in London in November with Dr Edward Mellanby, London, as chairman and Elmer V McCollum, Sc.D, Baltimore, as vice chairman. Other members present at this meeting included Mary Swartz Rose, Ph.D., New York, Dr William H Sebrell Jr, National Institute of Health, Washington, D C, Prof L Alquier and Dr L Lapique, Paris, Prof Johan Axel Hoyer, Stockholm, Dr Edward P Cathcart, Glasgow, Sir John Orr, Aberdeen and Professor Sharsky, Moscow. It was decided at this meeting to draft a statement on scientific principles governing the dietaries of certain groups, namely, women during pregnancy and lactation, infants, school children and adolescents up to the age of 21. Two subcommittees were set apart, one on energy-producing substances and the other on non-energy-producing substances.

**Personal.**—Dr John Mellanby, professor of physiology in the University of London, has been appointed to the Waynflete chair of physiology at the University of Oxford, to succeed Sir Charles Sherrington. He is a brother of Dr Edward Mellanby, secretary of the Medical Research Council of Great Britain.—Charles Melville Scott, M.B., lecturer in materia medica at the University of Edinburgh, has been awarded the first David Anderson-Berry prize by the Royal Society of Edinburgh for an essay entitled "On the Action of the X and Gamma Rays on Living Cells." The prize, founded by the late Dr Anderson-Berry in 1930, is a medal and a sum of money to be awarded triennially to the person who has recently produced the best work on the nature of x-rays in their therapeutic effect on human diseases.—Friends and former students of Prof Albert Dustin, professor of pathologic anatomy in the University of Brussels, Belgium, arranged a celebration for November 30 in honor of his twenty-fifth anniversary in the professorship. A plaque was to be presented to Professor Dustin, and remaining funds were to be placed at the disposition of the laboratory of pathologic anatomy to be used in research under his direction.—Staff appointments recently announced at the British Postgraduate Medical School at Hammersmith include Drs Francis R. Fraser as professor of medicine, George Grey Turner, professor of surgery, James Young, professor of obstetrics and gynecology, and Edgar H Kettle, professor of pathology.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Dec. 21, 1935

#### The Aims and Methods of Medical Science

The appointment of Dr J A Ryle to be regius professor of physic in the University of Cambridge, reported in a previous letter, is an important event in English medicine. As physician to Guy's Hospital, a connection which he has had to sever with great regret, he had attained a foremost position as an investigator, a clinician and a teacher. He has become regius professor at a remarkably early age, having qualified as recently as 1913. He has emphasized more than any one at the present day the importance of clinical investigation and of taking a general view of a case, instead of being dominated by the conclusions of specialists. In his inaugural lecture at Cambridge, entitled "The Aims and Methods of Medical Science," he has stated his position. He holds that our system of education has "become too complicated and unwieldy, our instruction too uncorrelated and departmental, too insistent on the acquisition of knowledge without provision for its proper distribution and assimilation. We have allowed the cult of specialism, both in clinical and in laboratory work, to spread unchecked and have lost sight of the need for a central controlling philosophy to hold the reins of the restive younger sciences." Few days go by that Professor Ryle does not behold faulty judgments due to lack of vision or to that inaccurate focusing which is the outcome of too much specialism. He admits that good specialism is essential to scientific progress, but he condemns excessive, premature and misdirected specialisms for the subversive influences which they have had on medical thought, action and education. He quotes from Hughlings Jackson "There is no harm in studying a special subject, the harm is in doing any kind of work with a narrow aim and a narrow mind." Jackson was pleading for better integration in the sciences as a counterpart to increasing specialism. While specialism in medicine can often deliver new truths or refinements of old truths, it can rarely of itself, in the complex human problems that confront us, give anything like the whole truth about a patient or his disease. Hence the too frequent instances of operations unnecessarily undertaken, of treatments injudiciously selected and forecasts unfairly given not because of the inherent difficulties of medicine, which tax every one, but simply because the nature and meaning of common symptoms have been insufficiently appreciated, because new machines and tests have been allowed to usurp the function of the eye, ear, hand or native wit, because the psychology of a patient has been misread or neglected in the previous estimates, or because the patient has never been viewed as a "whole" man or woman and the disease never studied as a "whole" disease. All too commonly the puzzled practitioner is persuaded into unwise diagnosis or action by a laboratory or radiologic opinion, unjustified because given without reference to or knowledge of the general situation which includes both organism and environment. In an earlier generation deficiencies in the matter of precise tests and scientific detail were often compensated by close observation and sane logic. The education today leaves little room for the training of reason. It piles up evidence but neglects instruction in its use.

The bacteriologist studies the agents of disease but only occasionally sees the disease in the living or even the defunct patient. Yet he has been willing to prescribe treatment in the shape of a vaccine prepared from a throat swabbing or a fecal specimen for a patient he has never seen and who has had no precise diagnostic label assigned to him and without any evidence of a causal relation between the organism isolated and

the malady, or evidence that a vaccine can produce the response supposed. Professor Ryle has seen cases in which the blame must be divided between clinician and bacteriologist, of the treatment for long periods by vaccines of gout as rheumatoid arthritis, of phthisis as bronchitis, and of symptoms due to the abuse of purgatives as colitis. Healthy and well directed and correlated specialism is the life breath of science, but the waste of time and money from the drive toward isolated pigeonholed research, by young men whose education has lacked breadth from the beginning and the very nature of whose tasks deprives them of the stimulus they most need, is sad.

Professor Ryle pleads for a closer connection between the clinician and the experimentalist. In the past, one man combined the two functions. This was the situation with Harvey, Jenner and Lister. Sir Thomas Lewis has brought precise experimental methods to the bedside. During the war Professor Ryle investigated spirochetal jaundice (Weil's disease) with a pathologist, the late Adrian Stokes. Day by day Stokes was in his ward and he was in Stokes's laboratory. Stokes saw his patients and he saw Stokes's guinea-pigs. These were inoculated from rats obtained from infected trenches and the same disease was produced as when they were inoculated from soldiers suffering from spirochetal jaundice. Also nonicteric cases were recognized. Such cooperation might be more widely followed.

Professor Ryle asks for the study of symptoms, their nature and their purpose, by more precise methods. Many chronic diseases, such as peptic ulcer, bacilluria and the severe anemias, would not become chronic if the meaning of the subjective phenomena that herald them were more widely appreciated. Symptoms which Dr John Brown described as "the voice of nature" are still poorly attended to and the constant search for new objective proofs has encouraged their neglect. The physician, the student of nature, as the name implies is the man who sees the problems and sees them whole. He is not always the man to separate and solve them in detail but in a given case or a given disease he alone, by his training is in a position to assess the contribution of the various factors at work and to indicate where specialist help is likely to prove of value. He must remain something of an anatomist, a physiologist, a pathologist and especially a psychologist and yet he is none of these or only sufficiently one to give him free access to the minds of the experts in these sciences.

Finally, Professor Ryle asks for a revival of what Gull, a wise physician of the great Guy's school, called 'the general view and avoidance of what he phrased as 'too narrow a pathology'. In medical science the time for the task of integration, however difficult it may be is overdue. Relying too much on the test tube or on the contributions of radiology and on instrumental devices, many doctors have lost their own souls (if the soul is compounded of or directed by the senses) and have failed to learn how profitably disease may be studied with eye, ear, hand and nose and the wit that garners essential information from the history, the environment, the relatives or friend. We need again general physicians of the type of Sydenham, Heberden, Bright, Wilks, Osler and Allbutt to partner the able neurologists, cardiologists, pediatricians, psychiatrists and research physicians of the present age.

#### Treatment of Paralytic Ileus

At the Royal Society of Medicine Mr Sampson Handley took for the subject of his presidential address to the Section of Surgery a subject which he has made his own—the treatment of paralytic ileus in acute appendicitis. A study of the pathology of peritonitis led him to the conclusion that these frequently fatal cases are amenable to timely and energetic surgical treatment. He did not consider jejunostomy to be the solution. The impression prevalent in some quarters that medical treatment abolishes the necessity for surgery in peri-

tonic ileus he considers wrong. He has been disappointed with Welch's serum. In a recent case at the Middlesex Hospital continuous gastric aspiration with periodic gastric lavage through an indwelling stomach tube proved valuable in maintaining the patient's condition and allowing time for a thorough trial of nonoperative measures. In all the cases of paralytic ileus which he had seen, medical measures were perseveringly tried and operation was resorted to only after these had failed. In all cases too, before the onset of the obstruction, the peritonitis that caused the obstruction had been treated according to the gospel of Murphy—by removal of the appendix, pelvic drainage, the Fowler position and free continuous administration of saline solution by rectum.

#### PARIS

(From Our Regular Correspondent)

Dec 13, 1935

#### Relation of Blood Sugar to Glycosuria

In the June issue of the *Journal medical français*, Prof F Rathery states that the results in general of chemical examination of the blood do not represent accurately the condition of the body tissues. This is especially true of the chloride, ammonia, urea and total nitrogen content of the blood. In two patients with diabetes the same percentage of blood sugar can be accompanied by totally different percentages of sugar in the urine. Again, in the same diabetic patient the hyperglycemia at different hours of the same day and on different days is not at all parallel to the glycosuria. One observes during the course of the same day that sugar in the urine will be found only when the blood sugar is on the decrease, while at a period when the blood sugar is very high there will be no sugar in the urine. The most severe cases of diabetes are not always accompanied by a very high blood sugar. Certain patients have a marked hyperglycemia without coma, and, again, others are comatose with a relatively low hyperglycemia.

Certain patients have a glycosuria with only a slight or no increase in blood sugar. On account of the variations of the normal sugar content of the blood during a period of twenty-four hours a tolerance test of a given diabetic patient for glucides is practically impossible if one depends on the variations of the glycemia under the influence of the glucides.

A hyperglycemia is found in other conditions besides diabetes, either in the form of free sugar or protein sugar ("sucre protéidique") resulting from the union of glucides with certain proteins of the tissues (especially the globulins and albumins). The protein glycemia is markedly high in cases of cancer in which there are multiple metastases and advanced cachexia also in severe pulmonary tuberculosis, and in influenza with pulmonary complications.

A glycemia should be interpreted differently in a normal person and in a person with diabetes. The latter, in order to metabolize glucides correctly and then lipoids and proteins appears in certain cases to need a higher blood sugar than a normal individual. To follow with any degree of accuracy such cases of diabetes would necessitate more frequent chemical examinations of the blood than is practicable. Fortunately, this is not essential if one pays close attention to the glycosuria. A certain number of physicians maintain the opposite, viz that disappearance of sugar in the urine does not suffice and that one must always aim to bring the blood sugar down to normal. This is a great mistake according to Professor Rathery. The average diabetic patient finds it irksome to follow a diet, especially if it is too strict. Diets that seem ideal from a scientific point of view are not easily applicable in everyday practice. A diet should be easy to follow. Diets that aim to combat acidosis and glycosuria have led to many a rude awakening as to their value. Every diabetic patient should be treated individually and no hard and fast rules, applicable to all diabetics, should be made.

Other elements than proteins, glucides and lipoids must be considered in a diet. These are vitamins and mineral constituents.

The conclusion is that the percentage of blood sugar has by no means the same importance in the treatment of a diabetic patient as the amount of sugar in the urine.

The importance of the urine examination is confirmed by the following clinical observations:

1 Diabetic patients whose urine is sugar free but who still have a certain degree of hyperglycemia note that such symptoms as asthenia, fatigue, loss of weight, thirst, pruritus and polyuria all disappear.

2 If a diabetic patient takes more sugars (glucides) than his tolerance test shows, a glycosuria will reappear, but this is not true of the blood sugar and hence the latter test is not as delicate a one.

3 If in certain diabetic patients whose urine is sugar free one tries to reduce by a strict diet a blood sugar that remains more or less high, the result is often negative. If one tries to obtain the same effect (reduction of hyperglycemia) with the aid of insulin, more or less serious intolerance symptoms will appear.

4 If in cases of diabetes complicated by pulmonary tuberculosis the administration of insulin is followed by disappearance of sugar and ketones in the urine but the blood sugar remains high, higher doses of insulin to reduce the hyperglycemia will either have no effect at all or will give rise to signs of intolerance.

There are certain indications, however, for a determination of the blood sugar. These are the following:

1 It is indicated at the beginning of the treatment, in order to distinguish a renal diabetes from a true diabetes. Even here, however, the blood sugar percentage does not in itself furnish enough evidence on which to base a prognosis.

2 One ought never to prescribe insulin for a diabetic patient without being sure that a hyperglycemia exists.

3 During a course of insulin treatments, especially if signs of intolerance are present and especially if a diabetic coma exists or there is resistance to insulin, it is essential to be informed as to the percentage of sugar in the blood.

4 In cases of relative insulin resistance, an estimation of the glycemia at different intervals of the day allows one to divide the doses of insulin more efficaciously. Such cases are relatively rare.

Rathery emphasizes the fact that the blood sugar test can no longer be considered indispensable in the treatment of diabetes. On the other hand, the frequent estimation of the glycosuria is the most reliable and indispensable guide to rational therapy.

To attempt by force to reduce a hyperglycemia to normal in a patient whose urine no longer contains sugar is not only useless but often dangerous.

#### Tuberculous Bacillemia

The question as to whether tuberculous bacillemia is common has been the subject of many investigations. One of the latest of these appears in the October issue of the *Annales de médecine* by Robert Debré, one of the most competent clinicians and bacteriologists here, and Marcel Perrault. Cultures on a modified Loewenstein medium, guinea-pig inoculations and histologic study were employed in the examination of portions of organs from necropsies of six adults who died of pulmonary tuberculosis and of fourteen infants. Of the latter, seven had positive skin reactions with initial tuberculous lesions and three of the remaining seven had been in contact with a tuberculous father or mother, but the other four, although not in contact, had mothers who were tuberculous.

The conclusions of Debré and Perrault are that 1 Tuberculous bacillemia that takes place in the terminal stages has not been as yet demonstrated. 2 During pulmonary tuberculosis in the adult, even in cases ending fatally, one either does not find any tubercle bacilli at all in the various organs or tissues or so few are present that they cannot be detected by culture or animal inoculation. Tuberculous bacillemia, if it does exist in such patients, is a rare finding. When positive, it is only transitory and slight.

In infants, migration of tubercle bacilli into the blood stream frequently occurs in pulmonary tuberculosis, but even here it is only transitory and of slight importance. If the infection is a virulent one, the tuberculosis becomes generalized very rapidly. If the infection is less intense, the small number of bacilli circulating in the blood are destroyed in the body.

#### BERLIN

(From Our Regular Correspondent)

Dec. 2, 1913

#### Research on Heredity

During the first period of hereditary research on man, the chief aim was to discover mendelian hereditary characters. There arose as a result an immense literature on familial transmission of some hereditary character or other. Once it had been established that a given character appears, disappears and reappears in accordance with mendelian laws, it came to be regarded as hereditary. All other characters that did not meet this requirement were regarded as "nonhereditary." Further progress was achieved with the beginning of research on twins, by means of which it is possible to measure hereditary influence even though the hereditary processes are complicated and there has been an intimate interaction of hereditary and environmental influences. Many of these researches, however, as Freiherr von Verschuer recently pointed out, are of questionable value because of one-sided selection. What is absolutely needed is research on series of families and twins selected at random. Persons with and persons without hereditary defects must be examined under the same conditions, a fixed minimum of examinations being made in all cases. This type of research never deals with individual persons but only with entire families (the four grandparents of an examinee and their offspring). The ultimate aim of a heredobiologic appraisal of this type is: 1 Complete and reliable determination of heredity in man including complicated cases. 2 Differential diagnosis of hereditary and nonhereditary cases of the same disease. 3 Creation of bases for a general hereditary prognosis. In addition to the special empirical hereditary prognosis in endogenous psychoses already ascertained, a hereditary prognosis in further diseases is needed, likewise, more extensive norms (for example for consultation on proposed marriages) are needed on which to base expert opinions. 4 Exact determination of the extent of the damage caused by adverse hereditary influences, and the frequency and range of hereditary predispositions, in no other way can conclusions be drawn on which to base answers to questions such as the origin of pathologic hereditary predispositions, and the relations between disease, racial types and miscegenation.

#### Etiology of Congenital Clubfoot

The question of congenital clubfoot was discussed by Dr. Van recently before the Hamburg Medical Society. Congenital clubfoot consists of a retarded development of the foot combined with an incomplete evolution of the normal tension processes of the lower extremity. In the grave types the musculature shows an unequal caliber of the several muscle fibers, which can be best explained by an inadequate innervation from the lowest region of the medullary plate (myelodysplastic changes). Likewise the frequent coincidence of clubfoot with spina bifida points to a dependence on disturbances in the development of the lower end of the neural tube.



The observations on the heritability of congenital clubfoot point to an endogenous causation. Research on family trees has furnished direct proof of hereditary influence in from 15 to 20 per cent of the cases. A study of 4,220 cases shows that the proportion of male and female children with clubfoot is as 2 is to 1. According to Man, this almost mathematically exact proportion of the sexes which can be explained only on the basis of the laws of heredity, leaves no room for exogenous theories. A third proof of the endogenous causation of clubfoot is the combination with other hereditary malformations that are known to be based on endogenous damage of the germ cell (cleft palate, luxation of the hip, occurring in from 5 to 10 per cent of the cases of clubfoot). The regional distribution points likewise to an endogenous causation of clubfoot. According to information from China, clubfoot is virtually unknown in that country. All the evidence, therefore, strengthens the view that congenital clubfoot is to be regarded as due to a checked development, inherent in the genes of the germinal plasma, the frequent coincidence with spina bifida and with myelodysplastic muscular changes pointing to connections between clubfoot and developmental disturbances of the lower end of the neural tube.

The occasional occurrence of congenital clubfoot of exogenous origin is not denied, but the number of such cases will not be greater than the extent to which the proportion of cases occurring in males and females deviates from the theoretical proportion of 2:1. This deviation however, as revealed by the statistics of series of cases, does not amount to 0.1 per cent. If one is going to attempt gradually to eradicate the pathologic gene, or hereditary germinal factor, from the population, one would be compelled to sterilize not only all persons presenting this defect but also their phenotypically sound parents and siblings, who must be regarded as latent carriers of the defect. The present legislation does not permit this. The eugenics courts will therefore be compelled for the present to confine their orders for sterilization to those persons with clubfoot in whom hereditary transmission is demonstrable by the familial appearance of the defect. Exemptions from sterilization should be permissible in the case of persons who possess unusual intellectual talent.

#### Medical Students and Nursing

During the past three semesters at the University of Freiburg more than 150 medical students (male and female) during the vacations and, to a certain extent, also during the semester have entered the Freiburg university clinics and the Baden health centers and nursing homes to serve as nurses or care takers of the sick. The 'Medizinischer Lehrdienst' at the University of Freiburg is an outgrowth of this recent practice. Students who begin their study of medicine at the opening of the winter semester 1935-1936 and who enter this *Lehrdienst* will serve as nurses throughout their first semester. In order that this service may not lengthen their stay at the university, the students who take part in the *Medizinischer Lehrdienst* remain matriculated at the university. Their work at the university is specially arranged so that they can take their preliminary tests at the regular appointed times. The student nurses reside in a dormitory under the direction of an older medical student. In the clinics in which they serve the student nurses receive free maintenance which reduces the living expenses of the individual student to a comparatively low level.

The *Medizinischer Lehrdienst* has come to be regarded as an essential factor in the training of a physician. It is planned to serve at the same time as a means of selecting the most promising students to continue their medical studies as it is thought that through observation of students' application in the clinics unsuitable students can be eliminated during their first semester's study.

#### Campaign Against Scabies

The federal minister of the interior has issued special orders with a view to eradicating scabies in itinerant persons, in whom almost exclusively, he states, scabies is now found. He has ordered that during the period November 18-25 all homeless itinerants shall be examined for scabies. Persons found to be affected with scabies must be given medical treatment without delay. Their under and outer clothing must be cleansed, and the bedding in the cheap lodging houses and shelters must be fumigated. Persons thus examined and disinfested will, if in a healthy condition, receive a certificate to that effect.

#### The Berlin Pediatric Society

After pediatrics had for many decades been provided for after a fashion as a section of the Berlin Gesellschaft für Innere Medizin, the Berlin Gesellschaft für Kinderheilkunde has now been created which puts an end to the tension that has existed for some time. The president of the new society is Professor Bessau, ordinarius at the University of Berlin. While admitting that science is of paramount importance, Bessau warned against exaggeration of the principle that everything must be done to further healthy manifestations and to increase the capacity for performance. For the welfare of the state, the important thing is not only a physically healthy child but also a child that is highly developed psychically, for, in the interrelations of the people as a whole, physical, psychic and mental qualities play an equally important part. It is an interesting fact that this received special emphasis.

#### ITALY

(From Our Regular Correspondent)

Nov. 15 1935

#### Blood Transfusion in the Army

At the first International Congress on Blood Transfusion, held in Rome, Lieut. Col. Virgilio De Bernardinis of the army medical corps presented a communication on blood transfusion, in peace and in war.

Since 1931, all the enlisted men of the sanitary companies have been examined as to the blood group to which they belong according to the classification of Jansky. The results obtained up to the end of 1934 are shown in the adjacent tabulation.

| Year  | Number of Men Examined | Results     |              |               |                |
|-------|------------------------|-------------|--------------|---------------|----------------|
|       |                        | Group I (O) | Group II (A) | Group III (B) | Group IV (A-B) |
| 1931  | 4,613                  | 2,011       | 1,786        | 641           | 175            |
| 1932  | 7,010                  | 2,421       | 1,837        | 73            | 107            |
| 1933  | 4,228                  | 2,075       | 1,660        | 464           | 128            |
| 1934  | 7,651                  | 1,642       | 1,447        | 478           | 121            |
| Total | 17,512                 | 8,149 (46%) | 6,636 (38%)  | 2,128 (12%)   | 799 (5%)       |

Thus there are always available for blood transfusion subjects whose blood group is known which assumes great importance in time of war. For the military hospitals, in time of peace, it is ordered that all shall be constantly equipped to be able to perform blood transfusion with the greatest rapidity at any time with the aid of any health officer, even in the absence of the surgeon and other specialized personnel. Groups of voluntary donors have been organized being selected from the sanitary corps and belonging to group I (O), consisting of universal donors. The selection of this type is justified by the peculiar aspects of the conditions existing in the army where the main indications for blood transfusion are acute anemia of traumatic origin. For interventions of a nonurgent character a donor of like grouping is to be preferred. To every mobilized sanitary unit will be assigned a group of twenty-five universal donors selected from among the men of the sanitary

corps on leave of absence, who have been subjected to an examination to determine whether they have acquired transmissible diseases since they quit the service. Training of a technical personnel goes hand in hand with the foregoing provisions. The theory of blood groups is taught in the Scuola di sanità militare, and there and in the hospitals practical drills on blood transfusion are given by health officers and by nurses.

### Chronic Myositis

At a recent session of the Società Piemontese di chirurgia, Professor Lenormant spoke on chronic myositis due to the staphylococcus. In acute suppurative myositis Pergola discovered this micro organism in thirty-one patients out of forty-six. The localization of micro-organisms in the muscles is facilitated by repeated slight traumatisms, by excessive fatigue and by undernutrition. In 54 per cent of the cases the myositis attacked several muscles, with a predilection for muscles subjected to the most strain during work. Of 105 muscular abscesses, twenty-seven were of the crural quadriceps, twelve of the pectoralis major, ten of the brachial biceps, and ten of the triceps. The septic types are always fatal.

In studying chronic myositis, the cause must be sought, according to most treatises on the subject, in tuberculosis, syphilis or mycosis (sporomycosis and actinomycosis). In addition to these forms, one must consider also myositis due to pyogenic micro-organisms. Up to the present, the bacteriologic examination has revealed only the staphylococcus, in spite of the fact that in many cases the presence of the gonococcus was justly suspected. Clinically, myositis sclerosa presents itself with the characters of a malignant tumor, without well defined margins, of the nature of an infiltrating growth of hard consistency. The histologic examination does not always constitute a basis for a frank differential diagnosis. The muscle most easily affected is the crural quadriceps.

Biopsy has been proposed for the establishment of a diagnosis but is not accepted by all surgeons, as the incision may provoke ulceration and a rapid growth of the tumor.

### Congress of Urology

As all the medical congresses this year the fourteenth National Congress of Urology was held at Bologna. The main topic was "Frequency of Cancerigenic Degeneration of Prostatic Hypertrophy." Prof. Ermanno Mingazzini said that the material on which the present study was based constituted the experience of forty urologists and comprised about 27,000 cases observed and 11,000 cases coming to operation. The percentage of degenerative adenomas varies, but it is gratifying to know that few investigators have found it as high as Hallé and Alberan, who reported that they found cancer in fourteen out of a hundred cases of simple hypertrophy. According to Gerathy, who studied 450 prostatic cancers, the cancer takes its origin from the true prostate. According to Halle and Alberan there are two distinct forms of degeneration: an adenoid epithelioma and a circumscribed alveolar form. Suspected symptoms are easy bleeding on passing the sound, and spontaneous radiating pains. Examination of the urine, and all other laboratory examinations, are of little value. Roentgen therapy is not effective. Even after surgical treatment, recurrences are observed in about 80 per cent of the cases.

### Thrombosis

Addressing the Società Piemontese di chirurgia, Naegeli explained new points of view concerning the problem of thrombo-embolism. According to the speaker, thromboses may be divided into local (due to wounds or caustics) and septic conditions. In Germany the apparent increase may be due to the use of intravenous injections, but it may be ascribable to the longer survival of heart patients by reason of the improved

methods of treating these patients. The diet is of great importance, for it should be noted that a high content of calcium salts in foods may induce thrombosis. Atmospheric conditions may have an influence in the causation of this lesion—acting on the neurovegetative system in patients with heart changes.

### Prof. Mariano Patrizi

The death of Prof. Luigi Mariano Patrizi, director of the institute of physiology at the university at Bologna, is announced. He occupied first the chair of physiology at the University of Sassari, later at the University of Modena and finally at the University of Bologna, where he succeeded Albertoni. His first researches were on memory. Like nearly all the pupils of Mosso, he studied also the physiology of the muscular apparatus, of body temperature, of bilateral and symmetrical voluntary impulses, and of fatigue. Much of his attention was devoted to the registration of vascular, muscular and respiratory reflexes, for which investigation he devised many types of technical apparatus. He studied the influence of music on the circulation of the blood in the human brain and the simultaneity of muscular and mental work. He left some eighty published articles. He was twice awarded the Nobel prize.

### RIO DE JANEIRO

(From Our Regular Correspondent)

Dec. 15, 1935

### Research Workers Die of Typhus

Dr. Lemos Monteiro of the Instituto Butantan of São Paulo, a well known scientist, died November 8 in São Paulo of exanthematous typhus. He has done important research on bubonic plague, diphtheria, tetanus, bacteriophage, tuberculosis, the BCG vaccine, filtrable viruses, variola, and yellow fever. Dr. Lemos Monteiro started research work on exanthematous typhus as soon as the disease appeared for the first time in São Paulo, and his studies are considered one of the most valuable contributions on the subject. Dr. Lemos Monteiro shared the fate of his predecessors, Prowazek and Pappenheim, in having died a victim to a rickettsia infection.

Dr. Edison de Andrade, assistant to Dr. Lemos Monteiro, died also during the first week of November, of experimental exanthematous typhus, in São Paulo.

### Organic Processes of Endocrine Origin

Dr. Aulo Pinto Viegas published recently an article on the relations between certain organic processes of endocrine cause, such as the basal metabolism, the specific dynamic action of the proteins, the cholesterol and uric acid content of the blood, and the anthropometric measurements. He made determinations of these processes in forty-eight normal adult persons and in seventy adults with various pathologic conditions. The author concludes that the basal metabolism varies inversely with the cholesterol content of the blood. The lower the former the larger the latter, and vice versa. The relation is more constant in pathologic than in normal conditions. The basal metabolism has no relation to the amount of uric acid in the blood. The specific dynamic action of the proteins is not related to the amount of uric acid in the blood of normal persons. In persons with pathologic conditions, however, a slight decrease of the former corresponds to a slight increase of the latter. Both alterations seem to be due to insufficiency of the anterior lobe of the hypophysis, provided other causal factors can be excluded. A lowering of the basal metabolism corresponds to an increase of the specific dynamic action, and vice versa. The inverse relation is more constant in normal than in pathologic cases and points to the different endocrine origin of both processes. These results seem to indicate that the changes of the organic processes of endocrine origin are of value in the determination of the endocrine functions only during the period of body development. When fusion of the

epiphysis, which marks the completion of sexual maturity, has taken place, the processes follow definite curves, which can be modified by further endocrine disturbances only in rare cases. As an illustration one observes that the dimensions of giants exceed those of average persons and that their specific dynamic action is lower than normal, owing to the hypofunction of the anterior lobe of the hypophysis following the hypophyseal hyperfunction in which the abnormal development originated.

#### Alkali Reserve After Tribrom-Ethanol Anesthesia

Dr Ovidio Unti lectured recently before the Sociedade de Biologia de São Paulo, discussing the changes in the alkali reserve that occur after the administration of tribrom ethanol anesthesia. He made determinations in two groups of patients: those in whom an operation was performed and those in whom it was not. The first group included ten patients. Acidosis and acetonuria were present in all cases after the operation. The lowering of the alkali reserve after the operation ranged between 38 and 20 per cent in comparison with the figures obtained before it. In one case it was 29.32 per cent lower after the operation. The lowering of the alkali reserve was not related to the duration of the operation. The second group included two patients. The alkali reserve changed in a case from 55.75 per cent to 54.71 per cent after the administration of the anesthesia. In the other case the figure of 59.59 per cent of the alkali reserve did not change. Acetonuria appeared in none of the patients who were given the anesthesia not followed by any operation.

#### Gold Treatment in Pulmonary Tuberculosis

Dr Jose Silveira of the Faculty of Medicine of Bahia recently published an article on the indications for the so-called gold treatment in pulmonary tuberculosis. He said that this treatment is not specific in pulmonary tuberculosis but has precise indications. Its application to all cases of pulmonary tuberculosis may bring discredit to the method and even endanger the life of the patient. A selection of proper cases cannot be made at present, because the results of the treatment depend on several factors, such as the gold compounds used, the technic and, especially, the sensitivity of the pulmonary lesions to gold compounds. The tuberculous lesions that most frequently regress after the gold treatment are those predominantly exudative, recent, small lesions that have a tendency to regression and are in Redeker's second stage of allergy. The indications for the gold treatment in general practice are general and special indications. Cases of noncomplicated pulmonary tuberculosis belong to the first order and those complicated by diabetes, syphilis and pregnancy belong to the second order of indications. The general indications can be for either preliminary (autonomous) or complementary gold treatment. Preliminary gold treatment is indicated in patients with unilateral pulmonary tuberculosis that shows the previously mentioned characteristics of sensitivity to gold compounds. The treatment is given with strict care from the clinical, roentgen and laboratory points of view. The primary gold treatment is indicated also in cases of bilateral pulmonary tuberculosis when patients cannot receive sanatorium treatment. In noncomplicated forms of pulmonary tuberculosis, satisfactory results are obtained from the administration of gold compounds as complementary to the sanatorium treatment and collapseotherapy, given either in association with or after failure of any of these treatments.

#### First Brazilian Congress of Cancer

The first Brazilian Cancer Congress took place in Rio de Janeiro in November. The inaugural session was opened by Dr Maurity Santos, president of the Sociedade de Medicina e Cirurgia of Rio de Janeiro and also the president of the congress. He reviewed the progress made by the national crusades against cancer and the projects to be developed in the near

future for the control of cancer. There was a large attendance. During the plenary sessions several members, delegates and other physicians read important articles and discussed the problems related to cancer control.

#### JAPAN

(From Our Regular Correspondent)

Nov 23, 1935

#### Public Hospitals

A plan to establish 600 hospitals for the public throughout the country at a total estimate of 30,000,000 yen spread over fifteen years has been drawn up by the public health bureau of the home office and will shortly be submitted for approval to its public health investigation committee. With regard to funds, the plan provides that half of the amount shall be provided by the prefectures concerned and half by the state treasury. The projected hospitals will not only give actual medical treatment but will carry out activities along various lines of public hygiene. Through these establishments the people of the provincial districts, who have so far been suffering from lack of medical facilities, will be given these facilities amply and the general health standard will be raised. Also medical practitioners in general thus will be enabled to practice medicine under better circumstances. This plan is believed to have been chiefly made by the necessity for beds with which to combat tuberculosis. In the campaign against tuberculosis, the metropolitan police board has decided, in cooperation with the home ministry, to take more positive steps by establishing a tuberculosis prevention section in the capital. The plan is to establish hospitals in the metropolis to accommodate tuberculosis patients in urgent need of segregation, it also provides for medical treatment free of charge. The number of tuberculosis persons in Tokyo last year reached 140,000, of whom more than 13,500 died during the year. There are at present only eighteen hospitals, including both public and private with only 2,960 sick beds. Furthermore, Mr Adachi, now leader of a political party, urged the minister of finance to support a plan to establish a department of health in the cabinet and assist the campaign against tuberculosis. He insists most earnestly on raising the funds for this work by permitting a lottery. The question is: How will it effect private practitioners?

#### Proposed Educational Reform

The intermediate schools, for boys between 12 and 16 years of age, are to have the course reduced from five years to four years by the education office, without any change in the high schools or grade schools. This change has been objected to by the teachers. The National Police Council, which includes

#### Average Growth of Japanese Boys

| Age   | Growth During<br>One Year<br>Cm | Age   | Growth During<br>One Year,<br>Cm |
|-------|---------------------------------|-------|----------------------------------|
| 1-6   | 6.1                             | 14-15 | 4.8                              |
| 6-9   | 4.0                             | 15-16 | 4.8                              |
| 9-11  | 3.4                             | 16-17 | 2.8                              |
| 11-12 | 5.2                             | 17-18 | 0.3                              |
| 12-13 | 6.4                             | 18-19 | 0.2                              |
| 13-14 | 5.0                             | 19-20 | 0.2                              |

almost all the great statesmen, such as the ex-prime minister, is also dealing with the reform in the educational system but is not limiting its attention to the intermediate schools. Various bodies of teachers oppose this plan on the ground that it pays hardly any attention to the physical development of the pupils who attend the intermediate schools. Japanese boys almost cease developing in height at the age of 17, as shown in the table, which was prepared by the physical development research institute. The period during which they attend the intermediate schools is the most important in their physical development, and

in that period of transition the shortening of the course would cause the boys to have an entirely new environment. Over 300,000 boys would be expected to enter high school after finishing the intermediate courses, where their education would be quite different. Other objections also have made the authorities reconsider the change.

### Epidemic of Encephalitis

Tokyo and vicinity experienced an outbreak of epidemic encephalitis during the summer. The metropolitan police board reports that from January to July there were only thirteen cases of the disease but in the latter part of August 813 cases appeared, most of them mild. In September, as it grew cooler after much rain, the number decreased. As for the general symptoms the onset in some cases was with an acute chill accompanied by a rise of temperature and headache, and in many others with general unrest followed by heaviness in the head, giddiness, and a slight rise of temperature. The temperature in some cases rose to 38 C (100.4 F) and in two or three days went up to 39 or 40 C (102.2 or 104 F), where it remained for several days with a little rise or fall. A sudden rise to more than 40 C was seldom observed. The pulse rate generally ranged from 100 to 120. With headache and sleeplessness for a few days, some patients became lethargic and others, having a slight headache and giddiness with vomiting, gradually became drowsy and then lethargic, afterward lapsing into coma. Seldom did drooping of the eyelids or double vision occur. There was a contraction of the pupil and a slight hyperemia of the conjunctiva. All patients had rigidity in the back of the neck. The tendon reflexes were generally normal with a few exceptions. The Babinski sign was not recognized. A few patients had convulsions. Muscular strength remained. The pressure of the cerebrospinal fluid rarely reached as high as 250, and it was clear or slightly turbid, and seldom bloody. There was a normal cell count. It is reported that from August 21 to September 8 the cases in Tokyo numbered 1,374, with 364 deaths (26.5 per cent). About 60 per cent were patients. Children under 10 years of age numbered 791 (about 60 per cent). Two cases seldom were found in the same family. By the end of September the total number of the patients throughout the country was estimated as over 1,600 but generally the death rate was low.

In the various recent medical meetings reports have been made concerning this epidemic. Dr. T. Mitamura and his associates of the Infectious Disease Research Institute injected glycerinated brain tissue from fatal human cases into twenty-three monkeys, but no signs of the disease were noticed. Brain tissue injections from cases in mice transmitted the disease to monkeys, however. Dr. Yamada of the institute experimented with mosquitoes as the most probable insect vector. Mosquitoes that bit encephalitis patients were kept for a week or a month and then were inoculated into mice as an emulsion. After three days, symptoms of encephalitis developed in the mice.

Prof. Dr. Takeuchi and associates of the Tokyo Imperial University reported that they were successful in isolating a filtrable virus while experimenting on mice. In a medical meeting at Osaka Imperial University, Prof. Dr. T. Taniguchi and his associates read a paper on isolating a filtrable virus. The Japan Science Promotion Association has a section on encephalitis research, and its meeting was held November 15 in the Imperial Academy in Tokyo. All the authorities on this disease were present, and each made a report. Dr. R. Inada, the chairman, said that the filtrable virus reported by the ten members on this occasion would sooner or later be proved to be the cause of the encephalitis that ravages this country in summer. Some are of the opinion that Japanese encephalitis is different from that seen in St. Louis and should be called "summer encephalitis." A satisfactory report on neutralization experiments has not yet been presented by any investigator.

### Marriages

WILLIAM RUSSELL DAVIS, Ancon, Canal Zone, to Mrs. Mary Hamilton Bunn of Cedartown, Ga., in December 1935.

CLYDE FINDLEY BOWIE, Atlanta, Ga., to Miss Bessie M. Crarr of Marianna, Fla., in Heflin, Ala., Nov. 23, 1935.

OREN DOUGLAS BOYCE, Charlotte, N. C., to Miss Virginia Wilkes in Charleston, S. C., Sept. 16, 1935.

JOHN EDWIN BROWN JR., Columbus, Ohio, to Miss Rosamond Lawson Foote at Baltimore, Dec. 28, 1935.

HAROLD THERON DONAHUE, Cass City, Mich., to Miss Alice Shirley Fromm of Detroit, Dec. 21, 1935.

MARSHALL KINNE BARTLETT, Boston, to Miss Barbara Frazer Hume of Muskegon, Mich., Dec. 21, 1935.

WILLIAM A. BORIN, Bartonville, Ill., to Miss Lulu Margaret Dustey of Peoria, Nov. 21, 1935.

VANCE LA MAR BAKER to Miss Louise Ashworth, both of Milwaukee, Nov. 7, 1935.

HAROLD M. BLOCK, Dallas, Texas, to Miss Jane Landau, January 3.

### Deaths

Walter Gelvin Bain of Springfield, Ill., Northwestern University Medical School Chicago, 1905, past president of the Sangamon County Medical Society, member of the Society of American Bacteriologists, American Society of Clinical Pathologists and the Radiological Society of North America, past president of the Illinois State Academy of Science, was bacteriologist in charge of the laboratory of the Illinois Board of Health, 1908-1909, served during the World War aged 59 director of the school for laboratory technicians, medical superintendent, pathologist and radiologist to St. John's Hospital, where he died, Dec. 25, 1935, of cholelithiasis and acute pancreatitis.

James Henry McDuffie Sr., Columbus, Ga., University of Maryland School of Medicine, Baltimore, 1887, member of the Medical Association of Georgia, past president of the Muscogee County Medical Society, and the Chattahoochee Valley Medical Association, formerly vice president and for many years member of the state board of health on the staff of the Columbus City Hospital, aged 75, died Nov. 16, 1935, of lobar pneumonia.

Franklin Pierce Capron of Providence, R. I., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1879, member of the American Academy of Ophthalmology and Oto-Laryngology, American Otolological Society and the New England Ophthalmological Society on the consulting staff of the Rhode Island Hospital, aged 83, died, Dec. 16, 1935, of aortic aneurysm and intestinal obstruction.

Frank Eugene Russell, Yorktown Heights, N. Y., College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1878, past president of the Medical Society of the County of Westchester, for many years county coroner, formerly member of the board of education, aged 78, died Nov. 20, 1935, of chronic myocarditis and arteriosclerosis.

Pierre Francis Higgins, Fort Worth, Texas, Fort Worth School of Medicine, Medical Department of Fort Worth University, 1910, member of the State Medical Association of Texas, served during the World War, aged 47, died, Oct. 9, 1935, of malignancy of the left testicle, with metastases to abdomen and liver.

Robert M. McMillen, Wheeling, W. Va., College of Physicians and Surgeons, Baltimore, 1887, Bellevue Hospital Medical College, New York, 1889, member of the West Virginia State Medical Association, past president of the Ohio County Medical Society, aged 73, died, Nov. 29, 1935, of cerebral edema.

Charles David Steinwinder of San Antonio, Texas, University of Texas School of Medicine, Galveston, 1919, fellow of the American College of Physicians, aged 45, member of the staff and chief of cardiac clinic, Santa Rosa Hospital, where he died Nov. 25, 1935, of uremia, acute nephritis and intestinal obstruction.

Frederick John Combe, San Antonio, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1889, formerly mayor of Brownsville, served during the Spanish-

American and World wars, aged 68, died Nov 26 1935, in the Medical and Surgical Hospital, of pyonephrosis and chronic nephritis

Harry Nelson Lutman, Versailles, Mo Barnes Medical College, St Louis, 1899, member of the Missouri State Medical Association, postmaster of Versailles, formerly secretary of the Morgan County Medical Society, served during the World War, aged 64, died, Nov 26, 1935, of cerebral hemorrhage.

Charles Glenn Church ⊕ Van Wert, Ohio, Northwestern University Medical School, Chicago, 1899 past president and secretary of the Van Wert County Medical Society, served during the World War, on the staff of the Van Wert County Hospital, aged 62, died, Dec. 10, 1935, of coronary sclerosis

William Dougal MacMillan, Vista, N C University of Maryland School of Medicine, Baltimore, 1869 member of the Medical Society of the State of North Carolina, Confederate veteran, aged 91, died, Nov 12, 1935, in Wilmington of arteriosclerosis and angina pectoris

Walter Israel Duce, Galveston, Texas Texas Medical College and Hospital, Galveston, 1881, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882, aged 76, died, Nov 29, 1935, of arteriosclerosis and chronic nephritis

Edward Everett Goodwin, Brockton, Mass, Boston University School of Medicine, 1899, member of the Massachusetts Medical Society, aged 71, died, Nov 6, 1935, in the Emerson Hospital, Boston, of hypertensive heart disease and coronary thrombosis

Mack Clelland Canan, Madison, Wis University of Illinois College of Medicine, Chicago, 1927, member of the State Medical Society of Wisconsin, on the staff of St Mary's Hospital, aged 35, died, Dec 10, 1935, of uremia and secondary anemia

Thomas Richard Morgan, Windgap, Pa, University of Oklahoma School of Medicine, Oklahoma City 1928 member of the Medical Society of the State of Pennsylvania, aged 37, died, recently, in the Eastern (Pa) Hospital, of spinal meningitis

Carm Y Detar ⊕ Oil City, Pa, Western Pennsylvania Medical College, Pittsburgh, 1892, past president of the Venango County Medical Society on the staff of the Oil City General Hospital, aged 65, died, Nov 28, 1935, of dilatation of the heart

Henry Harrison Hibbsman, Washington, D C, Temple University School of Medicine, Philadelphia, 1917, medical examiner of the Veterans' Administration, served during the World War, aged 48, died, Nov 18, 1935, of angina pectoris

Wallace Bower ⊕ Brooklyn, University of Pennsylvania School of Medicine, Philadelphia, 1920, aged 41 on the staffs of the Brooklyn Hospital and the Methodist Episcopal Hospital where he died, Dec 24, 1935, of injuries received in a fall

James Arthur Booth, New York, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882, member of the American Neurological Association, aged 79, died, Dec 22 1935, in St Luke's Hospital

Zina Pitcher, Elyria, Ohio Michigan College of Medicine Detroit 1883 member of the Ohio State Medical Association, aged 75, on the staff of the Elyria Memorial Hospital, where he died, Nov 13 1935, of cerebral hemorrhage

William Elmer Ritter, West Graham Va Jefferson Medical College of Philadelphia 1885, member of the Medical Society of Virginia, aged 72 died Nov 11, 1935 in St Luke's Hospital Bluefield of cerebral hemorrhage

William T Flynn, Everett, Wash Minneapolis College of Physicians and Surgeons medical department of Hamline University, 1905 aged 55, died Oct 22, 1935 in the Providence Hospital of uremia and nephritis

Charles Sumner Cahill, Cambridge Mass Harvard University Medical School, Boston 1886 member of the Massachusetts Medical Society aged 71 died Dec 10 1935 of angina pectoris and chronic myocarditis

George Saunders, Hibbing, Minn University of Vermont College of Medicine Burlington 1891 aged 73 died Nov 26 1935, in the Rood Hospital of carcinoma of the right lung and epithelioma of the right ear

Phineas B Carter, Macy, Ind Illinois Medical College Chicago 1905 member of the Indiana State Medical Association aged 60, died Nov 18 1935 of prostatic obstruction, nephritis and embolism.

George M Whitley Honey Grove, Texas Atlanta (Ga) Medical College 1891 for many years city health officer and surgeon to the fire department aged 67 died Oct 21 1935 of cardiovascular disease.

Loetta Beamer Bowles, Detroit, College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois 1906, aged 54, died, Nov 20, 1935, in the Grace Hospital, of pneumonia

William N Alderman, Athens, Ohio, Bellevue Hospital Medical College New York, 1878, formerly member of the city board of education, for many years bank president, aged 81, died, Dec 2, 1935

William Robert Lovett, Sylvania, Ga, University of Georgia Medical Department, Augusta 1887, member of the Medical Association of Georgia, aged 73, died, Nov 11, 1935, of heart disease

Edward Wilson Feldhoff ⊕ Allentown Pa, University of Pennsylvania Department of Medicine, Philadelphia, 1906 fellow of the American College of Surgeons, aged 59, died, Nov 10, 1935

William Edward Campbell, Ennis, Texas, Hospital College of Medicine, Louisville, 1905, member of the State Medical Association of Texas, aged 58, died, Nov 16, 1935, of chronic myocarditis

Maurice Buford Bonta ⊕ Los Angeles Johns Hopkins University School of Medicine, Baltimore, 1904, formerly on the staff of the Mayo Clinic, Rochester, Minn, aged 60, died January 4

Iverson Clark Case, Atlanta, Ga University of Georgia Medical Department, Augusta, 1917, served during the World War aged 51, died, Nov 25, 1935, of cerebral hemorrhage and nephritis

Odilon Joseph Comtois, Holyoke, Mass, School of Medicine and Surgery of Montreal, Que, Canada, 1884, aged 76, died, Nov 14, 1935, of mitral stenosis and arteriosclerosis

Alexander Blanchette, Haverhill Mass, University of Bishop College Faculty of Medicine, Montreal, Que, Canada, 1892, aged 65, died, Nov 13 1935, of suffocation due to a fire

James William Du Val, Wichita Falls, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1905 aged 67, died, Nov 15, 1935, of coronary heart disease

Gurney Monroe Schminky, Harrisburg Pa, Jefferson Medical College of Philadelphia, 1884, aged 72, died, Nov 8, 1935, in Shannokin, of acute dilatation of the heart

John Levi Roland, Obion, Tenn (licensed in Tennessee in 1911), aged 49, was killed Nov 5, 1935, when the automobile in which he was driving was struck by a train

Howard Isaac Post, Detroit, Detroit College of Medicine 1890, veteran of the Spanish-American and World wars, aged 68, died Nov 14, 1935, of chronic myocarditis

William John McRoberts, Hot Springs, S D, Beaumont Hospital Medical College, St Louis 1900, aged 76, died, Nov 16, 1935, in Hurley, N M, of heart disease.

George Walter Gaillard, Perdue Hill, Ala., Louisville (Ky) Medical College, 1882, aged 78, died, Nov 15 1935, of bronchopneumonia and cerebral hemorrhage

Asbel Newell Hoskins, Hubbardsville, N Y, University of the City of New York Medical Department, 1886, aged 85, died Nov 2, 1935, of cerebral hemorrhage

Robert Bentley Ray, West Concord Minn, Harvard University Medical School, Boston, 1899 aged 68, died, Nov 11, 1935 in Rochester, of coronary sclerosis

William Wade Morton, Bluefield, W Va, University of Louisville (Ky) Medical Department, 1890 aged 82 died Dec 5 1935, of cerebral hemorrhage

Ira L Blanton, MacClenny, Fla, Georgia College of Eclectic Medicine and Surgery, Atlanta 1910, aged 49, died, Nov 6 1935, of uremia

Charles Aldin Cole, Winnie, Texas St Joseph (Mo) Hospital Medical College, 1881, aged 81, died Oct 14 1935 of cerebral hemorrhage

Albert H Coble, Frankfort Ind, Rush Medical College, Chicago 1880, aged 80, died Nov 8, 1935, of lobar pneumonia and prostatic disease

Henry Eckert Morret, Wernersville, Pa Jefferson Medical College of Philadelphia 1903, aged 54, died, Nov 21 1935, of heart disease

Emery E Colby, Woodston Kan Kansas City (Mo) Medical College 1901, aged 62, died, Nov 25 1935, of chronic nephritis

Herman Henry Blankmeyer, Aransas Pass Texas, Eclectic Medical Institute Cincinnati 1888 aged 72 died Nov 11 1935

Richard L King Hulett Ga, Southern Medical College, Atlanta, 1894, aged 65, died, Oct 26, 1935



## Correspondence

### TUBERCULOUS CHANCRE

To the Editor —In the article entitled Tuberculous Lymphadenitis (*THE JOURNAL*, Dec. 7, 1935, p 1839) B N Carter and Jacob Smith call attention to a relatively rare form of post-traumatic skin tuberculosis, with accompanying marked regional or satellite lymphadenitis. This form of tuberculosis, although infrequent, is well known to those dermatologists who have carefully studied the various and protean tuberculoderms (Volk, R. Primary Complex, in *Tuberculose der Haut*, in Jadassohn's *Handbuch*, Berlin, Julius Springer 10 191, 1931). It seems that Carter and Smith, as well as American authors in general, have not sufficiently stressed the significance and the exact genesis of these primary manifestations and have failed to call attention to the pertinent literature. Most, if not all, of Carter and Smith's cases are certainly primary tuberculous complexes of the skin and regional glands. These cases demonstrate what occurs when the first inoculation with tubercle bacilli takes place in the skin and not as is usual in the lungs or gastro-intestinal tract. What Carter and Smith have observed is in reality a dermatologic Ghon tubercle, a primary skin complex identical with the primary internal complex described by Ghon, Ranke and others. This skin manifestation is of course of extreme interest, as it affords an opportunity to study an easily accessible primary tuberculous focus in human beings. Cases have been described and this phenomenon has been very well discussed, for instance by Bruusgaard (*Der primäre Komplex an der Haut*, *Arch f Dermat u Syph* 152 465 [Dec.] 1926), and even as early as 1911 by Boeck (*Jahresb d Kinderh* 75 105, 1912). The first exact reference to "chancreiform tuberculosis" that I have found in the American literature is that of Brunauer and Sobel (*Urol & Cutan Rev* 34 763 [Nov.] 1930) and even these authors did not seem to realize that they were dealing with what was in all probability a primary complex of the skin. I have myself at various dermatologic meetings in the United States presented three cases of primary skin tuberculosis of this type. H E Michelson (*Arch Dermat & Syph* 32 589 [Oct.] 1935) has presented the first correct and complete discussion of this subject in an American journal. It is of course rare that the tubercle bacillus enters the skin first and creates its first lesion in that organ. When this is the case it must obviously be preponderantly in children and in children exposed to adults with open tuberculosis (kissing!). The skin lesion then produced is usually insignificant, is often on the face, is almost always a small hard ulcer following a scratch or other trauma, and is accompanied by a marked and overshadowing regional, indolent and hard lymphadenitis. The picture is so similar to that of a syphilitic chancre that the uninitiated almost always make the clinical diagnosis of primary syphilis. Because of its resemblance to syphilitic chancre, the name often used for this type of tuberculosis is chancreiform tuberculosis or tuberculous chancre. The described primary tuberculous skin infection has taken place in a skin with unaltered immunologic reaction, that is in a child (very rarely in an adult) with a negative tuberculin reaction. Almost all other forms of skin inoculation tuberculosis (another exception is the ulcerative tuberculosis of the new-born, such as seen after ritual circumcision) are second infections, superinfections of the skin in an individual with a previous tuberculous infection elsewhere and with an already altered skin reaction to tuberculin. Examples of these secondary skin inoculations or superinfections (exogenous, lymphogenous or hematogenous) are many. Tuberculosis verrucosa cutis, tuberculosis colligativa or lupus vulgaris are the common consequences of such skin superinfections in individuals who have, or have had, tuberculosis elsewhere.

The following case of primary skin tuberculosis which came under my observation is perhaps unique in the fact that the child was proved to have a negative tuberculin reaction and a negative chest plate before the skin inoculation with tubercle bacilli took place.

A girl, aged 4 years, coming of a tuberculous family, had a cough and was examined by the family physician. The Pirquet test and Mantoux test were negative, the chest plate showed no indication of tuberculous infection, and the cough subsided in a short while. About four months later a small chancre appeared on the right cheek, with very marked indolent satellite lymphadenopathy. The physician's diagnosis of syphilis could not be confirmed in any way. (Repeated darkfields and blood Wassermann tests on the child and on the parents were all negative). The physician then brought the child to me. By this time the adenopathy had to some extent regressed and a small lupus nodule had appeared at the site of the healing ulcer on the cheek. An uncle who had visited and kissed the child was found to have an open tuberculosis. The Mantoux reaction was now strongly positive (0.1 cc of a 1:1,000,000 concentration of Koch's old tuberculin), while the lung roentgenogram and all other signs were still completely negative. In this case it was proved that the skin primary complex had brought about the skin hypersensitivity and that the skin allergy had presumably led to the formation of the lupus nodule at the site of inoculation.

It has seemed to me worth while to mention the practical side of primary skin tuberculosis, namely, the possible confusion of tuberculous chancre and adenopathy with syphilitic chancre and adenopathy, and furthermore to direct attention to the interesting immunologic and general lessons that may be learned from the comparison of primary and secondary inoculation skin tuberculosis and from study of the picture and course of the primary tuberculous complex of the human skin.

MARION B. SULZBERGER, M.D., New York.

### PAROXYSMAL VENTRICULAR FIBRILLATION

To the Editor —In *THE JOURNAL*, Dec. 21 1935, page 2044 a case of "paroxysmal ventricular fibrillation" associated with complete heart block is reported by W. Lawrence Kahall. Dr. Kahall states that epinephrine was beneficial in the prevention of syncopal attacks due to ventricular fibrillation and concludes that this drug is indicated in this condition. In support of his conclusions he refers to the literature, stating that "other observers have been successful in controlling paroxysms of ventricular fibrillation by intramuscular injections of epinephrine." This statement would lead the reader to believe that there is evidence from the literature that epinephrine is effective in the prevention of ventricular fibrillation. It is to be noted, however, that the references cited by Dr. Kahall do not deal with epinephrine in ventricular fibrillation but are published under the title "Epinephrine in Stokes-Adams Syndrome." It is true that recent reports have indicated that ventricular fibrillation is occasionally the cause of the syncopal seizure in heart block. It should be emphasized, however, that ventricular standstill is the more frequent mechanism and it is apparent on reading the reports referred to by Dr. Kahall that these deal with the action of epinephrine in the prevention of ventricular standstill rather than ventricular fibrillation.

The favorable effect of epinephrine in the prevention of ventricular standstill has been frequently reported and has been clearly demonstrated in an article which I have published (*Arch Int Med* 54 111 [July] 1934). As to ventricular fibrillation, there is considerable evidence that epinephrine is the most potent factor in its induction and that the administration of this drug is decidedly dangerous in patients who are susceptible to this serious arrhythmia. Schwartz and Jeter

(*Am Heart J* 5 652 [June] 1932) showed that epinephrine induced transient ventricular fibrillation in patients in whom syncopal attacks were due to ventricular fibrillation and emphasized the danger of this drug in such patients. I have (*Proc Soc Exper Biol & Med* 32 1297 [May] 1935) demonstrated that epinephrine intravenously consistently induced rapid ectopic beats from multiple ventricular foci. Such ectopic beats are the frequent precursor of ventricular fibrillation and were present in the case reported by Kahall, Levy and Lewis (*Heart* 3 99, 1911) induced ventricular fibrillation by the injection of epinephrine in cats under light chloroform anesthesia. Nahum and Hoff (*J Pharmacol & Exper Therap* 50 336 [March] 1934) and Hoff and Nahum (*Am J Physiol* 110 675 [Jan] 1935) showed that the removal of the adrenals from the body enormously decreased the susceptibility of the heart to experimental ventricular fibrillation. These investigators concluded that epinephrine acts synergistically with some other factor to increase ventricular rhythmicity leading to ventricular fibrillation.

It is my purpose in this communication to emphasize that the preponderance of evidence favors the view that epinephrine disposes the ventricles to fibrillation and to caution against the use of this drug in patients who are susceptible to this arrhythmia.

M. H. NATHANSON, M.D., Minneapolis

## Queries and Minor Notes

Anonymous Communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

### INFECTIOUS MONONUCLEOSIS

*To the Editor*—1 How long after the clinical signs of acute infectious mononucleosis have subsided (from one to three weeks) may the leukocyte count and the differential count be expected to return to normal? 2 Have subacute or chronic variations of this disease ever been reported? 3 How high may postcibal and fasting blood sugars reach during pregnancy before one must of necessity make a diagnosis of diabetes mellitus? To be more specific: Under such circumstances can a fasting sugar of 133 mg and a reading of 164 mg two hours after eating be physiologic? Can the proportions of dextrose and lactose in the urine and blood of such a patient be evaluated by any available tests? If so, by what tests? Please omit name and address.

M.D. Massachusetts

*ANSWER*—1 The important clinical signs of infectious mononucleosis are (1) lymph node enlargement (2) fever lasting an average of ten days but in some cases continuing for several weeks (3) throat infection, and (4) enlarged spleen. The diagnostic blood signs are an initial leukopenia in 20 per cent of the cases and a leukocytosis of from 10,000 to 32,000 in 80 per cent of all cases. The initial leukopenia is due to a drop in the granulocytes. The leukocytosis is characterized by an increase of lymphocytes, many of which are atypical but not immature. There are usually 50 per cent or more of lymphocytes. This lymphocytosis may continue for months after recovery from the acute illness. The lymph node and splenic enlargement may also persist for months after the patient's recovery.

There are various clinical types of infectious mononucleosis such as (1) the acute form with high temperature, (2) faucial (3) abdominal and (4) insidious. The insidious type may be almost afebrile, with a well marked lymph node enlargement. The prognosis of this disease is good but it is never possible to state the length of the illness or convalescence. Sometimes recovery is complete in a few weeks whereas in other cases lassitude, weakness and debility may persist for months. There are therefore acute, subacute and chronic forms of this disease.

2 When sugar is found in the urine of a pregnant woman one must differentiate between benign pregnancy glycosuria which is common, and true diabetes which is rather rare. The use of insulin, which enables young adults to survive, may make pregnancy in diabetes more frequent.

In benign pregnancy glycosuria there is no history of diabetes previous to the pregnancy, and usually no thirst or polyuria. There is no ketonuria, as shown by the nitroprusside and ferric chloride tests. A morning specimen of urine rarely shows sugar unless it is highly concentrated, with a specific gravity over

1.025. In the afternoon following meals the urine may show from 1 to 2 per cent sugar. The sugar in the blood collected before breakfast is usually within normal limits (from 80 to 120 mg per hundred cubic centimeters of blood). Two hours after a rich carbohydrate meal the blood sugar will be below 150 mg. A fasting blood sugar of 133 mg and a two hour blood sugar of 164 are above normal.

Pregnancy seems to lower the kidney threshold for dextrose, causing it to pass more readily into the urine. Benign glycosuria is usually first seen after the second month of pregnancy and persists until a few weeks before childbirth. Such a person may continue on a normal diet.

Lactosuria may develop toward the end of pregnancy but usually occurs a few days after delivery or during lactation. It is more marked if the breast is not properly emptied.

Dextrose and lactose may occur together. If dextrosazone crystals are secured by the phenylhydrazine test, together with a positive lactose test the quantity of dextrose present may be determined by quantitative sugar estimations before and after fermentation with yeast or *Bacillus paratyphosus B*. The difference is due to dextrose.

The test for lactose is made as follows: Dilute the urine until it contains less than 1 per cent of sugar, as indicated by a 1+ or 2+ reduction of Benedict's reagent. Mix 3 cc of urine, 2 cc of chemically pure ammonium hydroxide and three drops of 10 per cent sodium hydroxide. Heat in a beaker of boiling water and observe after two to five minutes heating. A distinct reddish color is positive. Other sugars give a yellowish color.

### HYPERADRENALISM AND DENERVATION OF ADRENALS

*To the Editor*—I often observe in my practice cases exhibiting the so-called hyperadrenalism syndrome—the type of patient tending to have a mild or moderate hypertension without organic basis, an irritable temperament, excessive perspiration and an unstable circulatory system readily provoked by aggravation or exertion into a tachycardia with a feeling of palpitation and vague cardiac oppression. Some of these patients have actually compared their reactions under provocation to their behavior when a small amount of epinephrine is injected by the dentist. 1 What is the latest accepted treatment of hyperadrenalism of the idiopathic type? 2 Is there a reliable depressant of the sympathetic nervous system? 3 What is the status of denervation of the adrenals or adrenalectomy as recently suggested by Dr. George W. Crile of the Cleveland Clinic? 4 What about irradiation of the adrenals with a view to depressing their function more or less permanently? 5 Are there any newly discovered drugs that are specific depressants of the sympathetics? 6 Please outline in full the latest knowledge relative to the foregoing.

M.D. Ohio

*ANSWER*—1 There seems to be no evidence that such a syndrome as idiopathic hyperadrenalism actually exists. An increase in the amount of epinephrine has not been demonstrated in these cases, although many investigators have attempted to do so using sensitive methods. Perhaps hyperadrenalism actually does occur in the presence of adrenal tumor. It is impossible to describe a specific treatment. One may advise, however, the avoidance of overexcitement and fatigue, daily rest at noon, and a moderate regimen of living.

2 For the depression of the sympathetic nervous system ergotamine or ergotoxin of suitable dosage may be tried although their value is not well established. Pentobarbital, sodium and amytal as sedatives are of course used but the possibility of establishing habitual use must be considered.

3 Surgical operations on the adrenal glands are not yet considered in any way established as useful methods. Surgical indications are not well outlined and many surgeons unqualifiedly condemn this procedure.

4 There is no good evidence that use of the x-rays on the adrenal glands is useful. It is of course, quite possible to do a considerable amount of harm by overexposure of the adrenal to x-rays.

5 We do not know of any specific depressants of the sympathetic nervous system as already mentioned.

### DERMATOSES IN WOOD PAPER INDUSTRY

*To the Editor*—I am having a number of cases of an apparent dermatitis in workers in the mills that make Kraft paper. These men from time to time get liquids on them of an alkali nature such as sodium or potassium hydroxide and so far as the chemist in charge of operations can tell these are the only known irritants. In one case the condition resembles an ivy poison and covers a greater part of the body but more particularly that part that is likely to be exposed to alkali—always worse in hot weather.

BRANTON V. POWELL, M.D. Camden, Ark.

*ANSWER*—This note contains no special interrogation which fact provides opportunity for brief general discussion of possible causes of dermatoses in the wood paper industry. Mechanical irritation from wood bark shreds and dust may lead to a

**dermatitis** After shredding, the wood fiber may be treated with caustic soda, sodium sulfate, or calcium bisulfite. Any one of these substances brought in contact with the skin may induce a dermatitis. The waste liquor in this treatment process may contain methyl alcohol, turpentine and tannic or other substances. In the further preparation of the pulp, bleaching is carried out, which commonly is accomplished by one of three different processes, namely chlorine, chlorinated lime, or the electrochemical method. Any one of these processes might prove to be the source of a dermatitis, or "chlor-acne." Later in the preparation of the pulp, loading materials may be added, including clay, calcium sulfate, rosin, gelatin and talc. Certain of these loading materials may be regarded with suspicion as possible sources of skin disorders. Commonly used sizing materials are rosin soap, alum, aluminum sulfate, starch, gelatin, and sodium silicate. Sizing materials have produced dermatitis on occasion. The making of colored papers calls for the use of dyes. Under the conditions of application, these dyes may almost entirely be exculpated as sources of dermatoses. Among other dyes employed are chrome yellow, ultramarine blue, indanthrene blue, methyl and ethyl violets, blues, greens and reds. Somewhat rarely, finely divided powdered colored glass is introduced into paper. Parchment paper is commonly treated with sulfuric acid. Heavy waterproof papers are usually impregnated with pitch, rosin, paraffin and vegetable or mineral oils. All in all, a wide variety of chemicals used in paper may be labeled potential sources of skin disease. The situation is complicated by high temperatures and high humidities attending paper manufacture. Heat alone persisting through long hours of work, may lead to a condition of the skin most favorable to the harmful action of trivial skin irritants. In the paper mills of Japan, a form of dermatitis termed locally "itako" has been traced to the action of a blastomycete. This condition is almost entirely limited to the summer months and is confined to the interdigital spaces. More extensive information may be found in the International Labor Office's "Occupation and Health," volume 2, page 549, in the section on "Paper Mills." There is also material of value in an article by G. F. Pedley, "The Hygiene of the Pulp and Paper Industry," in the *Journal of Industrial Hygiene* 6:28 (May), 70 (June) 1924.

#### SYPHILIS IN A CHILD

*To the Editor*—Recently a boy aged 2 years was brought to me with the following history. The birth weight was 6 pounds 7 ounces (2,920 Gm.). He was a premature child (seven and one half months). At birth there were vesicles on the palms of the hands and the plantar surfaces of the feet. He was apparently normal in other respects. He soon developed snuffles and was very susceptible to infections of the upper respiratory tract. He gained in weight for a time. This gain was followed by a loss or the weight remained at a standstill. He has always suffered from constipation. Dentition was delayed the first teeth appearing at 10 months. He was a difficult feeder and always a mouth breather. At present he talks some but does not walk. There are very prominent frontal bosses. He is prebelled. Breathing is stertorous. The complexion is pallid. The weight is 23 pounds (10 Kg.). Blood was drawn and the Wassermann reaction was four plus with a negative Kahn reaction. What type of treatment would you advise and what prognosis may one give? M. D. Ohio

**ANSWER**—Although the group of symptoms presented by this baby is suggestive of syphilis, it would seem advisable, since the Wassermann reaction was 4 plus and the Kahn negative, to have further serologic tests made before starting treatment. At the same time it would be advisable to examine specimens of blood from the mother, father, and the other children in the family. Positive clinical or serologic evidence in the parents or in the other children and a positive Wassermann reaction in the patient would be sufficient to warrant instituting treatment.

For a child 2 years of age, treatment with bismuth arsphenamine sulphionate has been favorably reported. One-tenth gram every five days for a series of eight injections usually constitutes a course. In a child of this age it would probably be advisable to start out with the idea of giving seven or eight such courses with an interval of two months between the courses. If the bismuth arsphenamine sulfonate given intramuscularly is not well tolerated in this dosage, neoarsphenamine and mercury rubs might be used as a rule intravenous injections in a child as young as this are attended with considerable difficulty.

It is noted that no comment has been made on the serologic results of this treatment. It would be advisable to give the prescribed course of treatment whether or not the Wassermann and flocculation tests become negative. In a child with syphilis, presenting the group of symptoms described, who has lived to the age of 2, the prognosis as a rule is fairly good. This, of course, is dependent on whether or not the viscera

or the nervous system has become involved. Some time during the course of treatment an examination of the spinal fluid should be made to determine whether or not neurosyphilis is present. When the prescribed treatment has been completed, the child must, of course, be placed on observation and examined at least annually, subsequent treatment being dependent on the progress of the patient.

#### NUMBNESS OF THUMB WITH PAROXYSMS OF PAIN

*To the Editor*—A primipara aged 29 who has always been in excellent health and whose last menstrual period occurred Jan. 16, 1933, complained of numbness of the right thumb associated with paroxysms of pain two weeks after missing this period. This pain has continued paroxysmally in character up to the present time and now is extending up the radial aspect of the forearm and involves the first and second fingers of the right hand. The pain is so severe that it interferes with sleep. When these attacks of pain come on the veins of the thumb and their eminence become engorged and the thumb becomes swollen. This pain lasts for about half an hour and then subsides. The patient has been checked carefully. The teeth are in good condition, she had some maxillary sinus infection which has been cleared up. The kidneys are normal, the blood count is normal and the Wassermann reaction is negative. She has been on a balanced diet with plenty of viosterol, dicalcium phosphate and brewers' yeast. Can you suggest any possible cause and what further treatment might be indicated? M. D., Pennsylvania.

**ANSWER**—Three conditions suggest themselves with the history, which is rather incomplete. The first is a vasomotor disturbance associated with a neuritis of the median nerve either infectious or traumatic, the second is a brachial entrapment such as a partial vascular occlusion, and the third is a cervical cord tumor. The following should be done: a careful motor and sensory examination of the entire right upper extremity, reaction of the skin of both forearms to cutaneous injections of histamine, determination of skin temperatures of the right and left thumb and thenar eminences, roentgen examination of both shoulders, arms, elbows, forearms and wrist, the effect of immersing the involved hand and forearm in hot and cold water. If these are negative, a spinal puncture should be done with a careful manometric study to determine the presence of a spinal block. One may carry out the following treatment: absolute rest, drinking of copious amounts of liquids or the taking of a gallon of Ringer's solution daily through a Rehfuss tube, elevation of the involved extremity and intramuscular injection of some substance such as typhoid vaccine or histamine for the purpose of producing dilatation of the peripheral vessels. The treatment may be carried out only if the spinal puncture fails to reveal any evidence of spinal block. If the latter is found, a laminectomy is indicated.

#### TREATMENT OF LEUKOPENIA

*To the Editor*—Please discuss the methods of correcting leukopenia giving the relative value of such medications as pentnucleotide, omadene (Winthrop Chemical Company) milk proteins and other foreign proteins. Also is there any known relation between leukopenia and humidity or temperature? I am at present encountering a great number of leukopenias most of them with a relative lymphocytosis without corresponding anemia. Symptomatically these patients merely complain of a lethargy and excessive fatigue. Many of them have many vacuolated white cells, both leukocytes and lymphocytes. Could you give the significance of these if any? E. W. CARTWRIGHT, M.D., Oceanide, Calif.

**ANSWER**—The correction of leukopenia must depend on the underlying cause in each individual as it is determined after careful clinical and laboratory investigation. It is possible for the total white count to be relatively low, between 3,000 and 5,000, for example, and the individual to be entirely well. On the other hand, leukopenia may at times be an important sign of disease. Any foreign substance injected into the normal body incites a cellular reaction reflected in the blood by a more or less transitory leukocytosis. The magnitude and duration of such responses depend on the sensitiveness of the bone marrow and/or spleen to the given stimulus. The various types of foreign food and bacterial proteins or chemical irritants are advised by certain authorities in leukopenic states on the basis of this nonspecific reaction as demonstrated in normal animals or in the normal human body. In disease, however, other factors enter into the picture and a leukocytosis does not necessarily follow. A somewhat different rationale underlies the advocacy of administration of some derivative of nucleic acid when additional increments of granulocytes are desired. Jackson has shown the nucleotides to be constituents of normal plasma. Animal studies have shown sodium nucleinate or the nucleotides to be the most powerful specific stimulus of neutrophilic proliferation in bone marrow, and in ectopic foci elsewhere in the body of any nontoxic physiologic substance yet studied (Doan). Furthermore, its use in selected clinical

patients has resulted in the appearance of myelocytic increases in the peripheral blood prior to the increase in total white count, entirely comparable with the reticulocyte response following liver or iron therapy in appropriate anemic states, and serial bone marrow biopsies have confirmed the stimulatory and maturative changes in the myeloid elements underlying these changes in the peripheral blood (Doan)

Ordinary atmospheric humidity and temperature fluctuations do not appreciably influence the white count beyond the physiologic limits for normal. However, when the temperature and humidity are raised, as in air conditioned cabinets used for fever therapy, there is an initial leukopenia followed by a marked leukocytosis.

When leukopenia with a relative lymphocytosis is encountered with definite clinical symptoms, the physician must consider several possibilities. Schultz's syndrome of agranulocytic angina, aleukemic leukemia, lymphatic or monocytic infectious mononucleosis, typhoid, malaria, allergy. In occasional highly nervous, overactive individuals, extreme fatigue and exhaustion will in themselves depress the granulopoietic function to the danger point, in such instances complete physical and mental relaxation alone will accomplish recovery. If aminopyrine or other myelotoxic drugs have been taken without a physician's prescription and careful oversight, a granulopenic leukopenia may result. A careful drug history should be taken in every case showing this tendency to a low white count.

Vacuolated granulocytes and lymphocytes reflect directly some chemical or bacterial toxin in the body. They usually are found in conjunction with "toxic granulations" in the neutrophilic leukocytes and nuclear degenerative changes in the lymphocytes. Vacuolation usually represents a peripherally acting toxic agent, which may depress the number of circulating units without destroying the hematopoietic centers.

"Correcting leukopenia" resolves itself into the most meticulous analysis of each patient presenting this sign as one element in a syndrome, and treating the whole individual.

#### MISCARRIAGE

*To the Editor*—A white married woman aged 24 had a gonorrheal infection at the age of 19. There is no history of salpingitis. The cervix was cauterized when she was 21. She became pregnant one year ago and carried her baby until the sixth month at which time she had a miscarriage after life had ceased for about three weeks. She is now pregnant again in her second month. What are the probabilities for a recurrence of a miscarriage. Will injections of the glandular extracts help her? If the miscarriage does recur will a curettage perhaps help in future pregnancies?

M D New Jersey

*ANSWER*—It is hardly likely that the miscarriage at six months was due to the gonorrheal infection which the patient acquired five years ago. Furthermore, if gonorrhea were the etiologic factor there would almost certainly have been evidence of gonorrhea at the time of the miscarriage. When a gonorrheal infection interferes with fertility it nearly always does so by producing sterility, but it seldom results in a miscarriage or in death of the fetus. The sterility in the female is usually due to occlusion of the fallopian tubes but it may be caused by a cervical infection. However if the latter is present, gonococci may be usually found in the cervix. Gonorrheal endometritis is an infrequent occurrence and nearly always a temporary one. It interferes with nidation of the ovum. Syphilis on the other hand, is responsible for many miscarriages in the later months of pregnancy and for a large number of fetal deaths near or at term. Therefore this patient should have one or more Wassermann tests made and her history should carefully be gone into to see whether any secondary manifestations were ever noted. It is unfortunate that the fetus and the placenta were not studied at the time of the miscarriage for evidences of syphilis. A thorough investigation should be made of the cervix, Bartholin's glands and ducts and Skene's ducts to see whether any gonococci are present in these areas. If any are found treatment should of course be instituted. If neither syphilis nor gonorrhea is found there need be no special concern that there will be another miscarriage. It not infrequently happens that a woman's first pregnancy terminates in a miscarriage especially if the pregnancy occurs after a long period of sterility. The only glandular extract that may be helpful in cases of repeated miscarriages is corpus luteum or progesterin. However the only action of this extract is to allay the irritability of the uterus and therefore it acts only indirectly in preventing death of a fetus. There is surely no necessity to use this substance at the present time. If a second miscarriage occurs it may be advisable to perform a curettage to see whether any light can be shed on the etiology of the miscarriages by a study of the endometrium. However a curettage should not be performed if evidences of gonorrhea are present.

#### CHRONIC BRONCHITIS WITH EMPHYSEMA AND RIGHT VENTRICULAR FAILURE

*To the Editor*—A man aged 59 has had asthma for the past three years which he says followed a severe chest cold. He has been tested twice in different laboratories for allergic sensitivity but this has been found negative. He has had autogenous vaccines made from the secretions of the nose and throat but besides having untoward reactions on inoculation of the vaccine he has derived no benefit from it. For the past two winters he has been in Arizona but has had no relief. There is severe emphysema of the chest but only a slight amount of wheezy breathing. Inspiration is accompanied by voluntary effort and comes in short frequent inspirations. Expiration is not long drawn out as one would expect in typical asthma. The lower lip is quite cyanotic. The least amount of exertion results in severe dyspnea and extreme discomfort which is relieved by 10 drops of epinephrine. I have never heard rales during an attack. Recently he has had marked edema of the ankles and penis. Am I safe in putting him on digitalis since he is taking epinephrine five or six times a day? Would you give this patient scillaren instead of digitalis? Also would you use a diuretic and if so what one? I am using diuretin.

M D, New York

*ANSWER*—It seems most likely from the description of the attacks, the cyanosis, the severe dyspnea, the general edema and the marked pulmonary emphysema that the condition described represents chronic bronchitis with emphysema and right ventricular failure with peripheral edema. The so called cor pulmonale, or emphysema heart, represents the diagnosis. If this is the case digitalis, rest and the relief of dyspnea by the judicious use of sedatives, morphine if necessary, are indicated. Diuretic management is particularly effective in cases of this type, especially when there is extensive cardiac degeneration. The drugs of choice are the acid salt types of diuretics, ammonium nitrate or ammonium chloride, with a relatively low sodium chloride intake and neutral or acid ash diets. The mercurial diuretics (of which salyrgan is one) are particularly effective when they are employed in combination with such a program.

If this patient has a true bronchial asthma, treatment should be directed to its cause. An allergic type of asthma uncommonly makes its first appearance at the age of this patient. Reflex causes such as sinusitis, polyposis and other diseases of the upper air passages might be exciting causes for asthma of reflex type. Bacterial types of asthma have apparently been considered. In the case of primary bronchial asthma, digitalis may be used with some caution because of the occasional increase in bronchospasm. However, in the presence of decompensation the treatment outlined is applicable.

Schillaren has no advantages over digitalis if the effects are properly evaluated.

#### TOXICITY OF DYES IN TEXTILE INDUSTRY

*To the Editor*—In general what are the toxicity and the minimal lethal dose of the various kinds of dyes used in the textile industry for dyeing cotton cloth? What are the most toxic of these and the minimal lethal dose? Most of the dyes used in medicine are used in doses of about 2 to 7 grains (0.13 to 0.46 Gm). I want to find out if there are any dyes that would produce death in less than 1 grain (0.065 Gm).

W H ZEIGLER Phar D Charleston S C

*ANSWER*—No finished dyes, such as used in the textile industry or the intermediates thereto, are known to possess such toxicity as to produce death in human beings in less than 1 grain (0.065 Gm) doses. Arsenic, entering into aniline dyes is not known to have killed an adult in amounts less than 2 grains (0.13 Gm). Aniline may appear in unaltered form as an impurity in finished dyes. The minimal lethal dose of this substance is perhaps in excess of one half ounce (15 cc.), 25 cc. having caused death in at least one instance. The minimal lethal dose of the oxalic acid frequently used along with cotton dyes as a mordant is approximately 4 Gm. Chromium compounds likewise used along with dyes have caused death after an intake of approximately 10 Gm. The toxicity of aniline dyes long has been overestimated. Apart from skin irritation and apart from the harmful action of lead arsenic chromium and antimony entering into aniline dyes or employed concurrently few dyes are harmful. At least 130 coal tar dyes have been specified as suitable for use in foods. The harm arising from dyes is limited largely to the intermediates of dye manufacture rather than to the finished products. Extensive discussion of dyes and dyeing may be found in "Occupation and Health" published by the International Labor Office Geneva in 1934. A less extensive chapter may be found in "Legal Medicine and Toxicology" by Peterson Haines and Webster (Philadelphia W B Saunders Company 1926) volume II. These two cited publications in turn furnish additional references to the literature.

## VARICOSE VEINS OF FOREARM

*To the Editor*—Will you please let me know where I may find literature pertaining to the treatment of varicose veins of the forearm. Recently I was consulted by a woman who had moderate sized varices on the upper and lower parts of both legs but which caused her neither pain nor discomfort. Her complaint was of a group of varicose veins of moderate size covering an area of about 4 inches square, involving the superficial veins of the posterior surface of the right forearm. These varices caused her considerable pain at times intense. Are injections advisable in this case?

M D Michigan.

**ANSWER.**—A distribution of varicosities such as those described is rare. One must differentiate between a simple valvular incompetence and secondary dilatation of the superficial veins, a congenital vascular anomaly that may extend beneath the superficial fascia or a true venous hemangioma. Attacks of intense pain might suggest recurrent attacks of phlebitis with residual phleboliths thickening of the veins and increased surface temperature. The possibility of some venous compression proximal to the dilatations must also be considered. Injections preceded by a ligation proximal to the dilatations may be considered, but, if the phlebectasia is well localized, complete removal in competent hands is safe and simple.

## TRAUMATIC ANEURYSM

*To the Editor*—While a man aged 29 was shoeing a horse a lunge on the part of the animal caused him to be injured in the left wrist. This injury consisted of the penetration of one of the shoeing nails into the wrist at the usual place for taking the pulse. He tells me that there was a spurt of blood and immediately came to me. I dressed the wound by applying an antiseptic and a pressure bandage using a generous ball of cotton over the area as a pressure pad even though there was no bleeding at the time and merely a large swelling with one puncture hole. Tetanus antitoxin was administered. A swelling persisted which is now fluctuating and also pulsating assuring the diagnosis of a traumatic aneurysm in my judgment. Would you please inform me as to what is indicated? The tumor is approximately 20 inch in diameter.

HAROLD V MANGUM M D Ackley Iowa

**ANSWER.**—The development of a pulsating swelling following such an injury is typical of a traumatic aneurysm.

This is probably a false rather than a true aneurysmal sac, which is no doubt connected to the radial artery.

Operation is indicated regardless of the type of aneurysm. A tourniquet should be applied and the aneurysm should be either dissected out and removed or all of the anastomosing blood vessels ligated and cut.

No harm would result from ligating the radial artery and vein, unless the ulnar artery and collaterals were also impaired.

## FAT ATROPHY AFTER INJECTION OF INSULIN

*To the Editor*—I have a patient who develops an atrophy of the subcutaneous fat at the point of injection of insulin. Can you explain this reaction? Please let me know whether it has occurred in other patients.

A L GRAFF M D Cedar City Utah

**ANSWER.**—Although this phenomenon does not occur in most cases, it has been noted occasionally by many observers. Its explanation is not known.

## CRACKING NOISE IN JAWS

*To the Editor*—In your reply to the inquiry regarding a cracking noise in the jaws (Dec 21 1935 p 2095) you remark that it is necessary to watch that the patient does not open the mouth too wide. Lucky the husband who gets by with such advice to his spouse! Such a suggestion may bear more weight in patients with cracking jaws unfortunately a conservative treatment is not always effective and the condition may become so embarrassing and painful as to require a more radical procedure.

So-called intermediate cracking created by an obstacle in the upper jaw articulation is observed during the opening of the mouth. The terminal crackling originating toward the end of the same movement is due either to a habitual dislocation in the upper joint, meniscotemporal articulation or to a subluxation in the lower joint, i.e., meniscoccondylar articulation. The last mentioned variety is the most frequent cause of terminal cracking. The underlying cause is probably a deforming arthritis. Traumas infectious and toxic processes or a constitutional inferiority of the cartilage play a rôle in the genesis of this arthritis. Dental anomalies should not be overlooked. Obstinate intermediate cracking and also the habitual subluxation in the lower articulation may require an excision of the disk while a habitual dislocation of the upper articulation may necessitate an artificial limitation of motion. Konjetzny's transposition of the disk for ward or Liudemann's splitting of the intercle is the operation of choice in such cases. It goes without saying that an operation is an ultimatum refugium and should be considered only if conservative treatment fails.

Further details on the subject may be found in the following two papers:

Axhausen, G. *Deutsche Ztschr f Chir* 232: 238 1931  
Truffert P. *Bull méd Paris* 44 855 (Nov 22) 1930

JOSEPH K. NAKAT M D Chicago

## Medical Examinations and Licensure

## COMING EXAMINATIONS

**ALASKA** Juneau March 3 Sec Dr W W Council, Juneau.  
**AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY** Written examination for Group B applicants will be held in various cities throughout the country March 14. Oral examination for Group A and B applicants will be held in Kansas City, Mo May 11-12 Sec Dr C Guy Lane, 416 Marlboro St Boston.  
**AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY** Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28. Applicants must be filed not later than February 28. Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11-12. Applications must be received not later than April 1 Sec., Dr Paul Titus 1015 Highland Bldg Pittsburgh (6).  
**AMERICAN BOARD OF OPHTHALMOLOGY** Kansas City Mo May 11 and New York Oct. All applications and case reports must be filed sixty days before date of examination. Asst Sec Dr Thomas D Allen 122 S Michigan Ave Chicago.  
**AMERICAN BOARD OF OTOLARYNGOLOGY** Kansas City, Mo., May 9 Sec. Dr W P Wherry 1500 Medical Arts Bldg Omaha.  
**AMERICAN BOARD OF PEDIATRICS** Kansas City Mo May 9 Sec. Dr C A Aldrich 723 Elm St Winnetka Ill.  
**AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY** St Louis, Mo, May 8-9 Sec. Dr Walter Freeman, 1028 Connecticut Ave Washington D C.  
**AMERICAN BOARD OF RADIOLOGY** Kansas City Mo May 8-10 Sec Dr B R Kirklin Mayo Clinic Rochester Minn.  
**CALIFORNIA** Los Angeles March 9-12 Reciprocity. Los Angeles March 18 Sec. Dr Charles B Pinkham 420 State Office Bldg, Sacramento.  
**CONNECTICUT Basic Science** New Haven Feb 8. Prerequisite to license examination. Address State Board of Healing Arts, 1895 Yale Station New Haven. *Medical (Regular)* Hartford March 10-11. *Endorsement* Hartford March 24 Sec. Dr Thomas P Murdock, 147 W Main St., Meriden. *Medical (Homeopathic)* Derby March 16 Sec. Dr J H Evans 1488 Chapel St New Haven.  
**ILLINOIS** Chicago Jan 28-30 Superintendent of Registration, Department of Registration and Education Mr Homer J Byrd Springfield.  
**IOWA** Des Moines Feb 25-27 Dir., Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines.  
**MAINE** Portland March 10-11 Sec. Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland.  
**MASSACHUSETTS** Boston March 10-12 Sec. Board of Registration in Medicine Dr Stephen Rushmore 413 State House, Boston.  
**NATIONAL BOARD OF MEDICAL EXAMINERS** Parts I and II Feb 12-14 May 6-8 June 22-24 and Sept 14-16 Ex Sec Mr Everett S. Elwood 225 S 15th St Philadelphia.  
**NEVADA** Reciprocity Carson City Feb 3 Sec. Dr Edward E. Hamer Carson City.  
**NEW HAMPSHIRE** Concord March 12-13 Sec. Board of Registration in Medicine Dr Charles Duncan State House Concord.  
**NEW YORK** Albany Buffalo New York and Syracuse, Jan 27-30. Chief Professional Examinations Bureau Mr Herbert J Hamilton 315 Education Bldg Albany.  
**PUERTO RICO** San Juan March 3 Sec. Dr O Costa Mandy Box 536 Sao Juan.  
**VERMONT** Burlington Feb 12 Sec. Board of Medical Registration, Dr W Scott Nay Underhill.  
**WYOMING** Cheyenne Feb 10-11 Sec. Dr G M Anderson, Capitol Bldg Cheyenne.

## North Carolina June Report

Dr B J Lawrence, secretary North Carolina State Board of Medical Examiners, reports the written examination held in Raleigh, June 10-14, 1935. The examination covered 7 subjects. An average of 80 per cent was required to pass. Sixty-four candidates were examined, all of whom passed. Twenty-nine physicians were licensed by endorsement. The following schools were represented:

| School  | PASSED                  | Year Grad      | Per Cent            |
|---|-------------------------|----------------|---------------------|
| College of Medical Evangelists  |                         | (1935)         | 88.6                |
| Howard Univ College of Medicine (1934)  | 87 4                    | 88 6           | (1935) 91.4         |
| Emory University School of Medicine   |                         | (1935)         | 84 90.1             |
| Northwestern University Medical School  |                         | (1935)         | 83.9 86.4 91.1      |
| Johns Hopkins University School of Medicine                                       |                         | (1933)         | 82.1                |
| Univ of Maryland School of Medicine and College of Physicians and Surgeons (1935) | 87 1                    | 88 6 88 7 88 9 | (1935) 89.3 90.9 91 |
| Harvard University Medical School   |                         | (1935)         | 88.1 90.9           |
| Cornell University Medical College  |                         | (1935)         | 88.6                |
| Long Island College of Medicine   |                         | (1935)         | 87.7                |
| New York University College of Medicine   |                         | (1935)         | 89.1                |
| Syracuse University College of Medicine (1934)                                    | 85 3                    | (1933)         | 86.1                |
| Duke University School of Medicine  |                         | (1935)         | 81.1                |
| 90 6 (1934) 85.1, 89.1 (1935) 92.1  |                         | (1935)         | 92.1 93.3           |
| Jefferson Medical College of Philadelphia   |                         | (1934)         | 81.3                |
| Temple University School of Medicine  |                         | (1935)         | 81.1                |
| 90 3 91 7 (1935) 83.1   |                         | (1935)         | 81.1                |
| University of Pennsylvania School of Medicine                                     |                         | (1935)         | 81.1                |
| 88 3 88 6 89 7 90 3 90 9 91 3 91 7  |                         | (1935)         | 81.1                |
| Medical College of the State of South Carolina                                    |                         | (1930) 80      | (1935) 86.4 91.7    |
| Meharry Medical College   |                         | (1933)         | 84.9                |
| Medical College of Virginia   |                         | (1935)         | 87.7 88 88 1        |
| 92 3 (1934) 90.1 82.3 (1935) 86.7 87 7 88 88 1                                    |                         | (1934)         | 87                  |
| 88 7 88 7 88 9 89 6 91 91 91  |                         | (1934)         | 87                  |
| Queen's University Faculty of Medicine  |                         | (1934)         | 87                  |
| School  | LICENSED BY ENDORSEMENT | Year Grad      | Per Cent            |
| College of Medical Evangelists  |                         | (1933)         | 81.1                |
| Georgetown Univ School of Medicine (1923)   | Pa                      | (1934)         | 81.1                |
| Howard University College of Medicine   |                         | (1937)         | 81.1                |



|  |                  |                 |
|--|------------------|-----------------|
| Atlanta School of Medicine                         | (1911)           | Georgia         |
| Emory University School of Medicine (1923), (1931) | (1934)           | Georgia         |
| University of Georgia Medical Department           | (1926)           | Georgia         |
| University of Louisville School of Medicine        | (1933)           | Indiana         |
| Tulane University of Louisiana School of Medicine  | (1933)           | Louisiana       |
| Johns Hopkins University School of Medicine        | (1931)           | Maryland        |
| University of Minnesota Medical School             | (1933)           | New York        |
| Washington University School of Medicine           | (1926)           | N B M Ex        |
| University of Cincinnati College of Medicine       | (1932)           | Ohio            |
| Jefferson Medical College of Philadelphia          | (1932)           | Tennessee       |
| University of Pennsylvania School of Medicine      | (1929)           | New York        |
| (1934) N B M Ex                                    |                  |                 |
| Medical College of the State of South Carolina     | (1934)           | S Carolina      |
| Univ of Tennessee College of Medicine (1932 2)     | (1933 3)         | Tennessee       |
| Vanderbilt University School of Medicine           | (1931)           | Penna           |
| Medical College of Virginia                        | (1931) (1933, 2) | (1934) Virginia |

## Book Notices

*A Treatise on Medical Jurisprudence* By Benton S. Oppenheimer  
LL.B. LL.M. Professor of Law, College of Law, University of Cincinnati  
Cloth Price \$4 Pp 290 Baltimore: William Wood & Company 1935

Medical jurisprudence according to the author, a member of the Cincinnati bar, deals (1) with the application of the principles of medicine to the problems that lawyers encounter in legal matters and (2) with the application of the principles of law to legal questions that sometimes trouble physicians in the course of practice. The author, as a lawyer, has wisely limited his text to a discussion of the latter function of the art. Concerning such matters as identity, impotence and sterility, rape, pregnancy, abortion, legitimacy and illegitimacy, infanticide, wounds, asphyxiation, poisoning and death and changes after death, his book is silent. Its scope, and the relative weight given to different topics may be inferred from the fact that after an introductory chapter on medical jurisprudence and the practice of medicine, covering twenty pages, four chapters are devoted to a discussion of the relations between physicians and patients covering ninety-three pages, and one chapter, covering 103 pages, is devoted to the law of evidence. One chapter, eleven pages, is devoted to the law governing hospitals, another, ten pages, to dying declarations, and another, twenty-eight pages, to miscellaneous topics such as the physician's right to compensation, compulsory medical or surgical treatment, the right to perform necropsies and the office of coroner. Copious citations to legal authorities are given in support of the author's statements, with explanatory footnotes where indicated. But notwithstanding the meticulous care with which this book seems to have been prepared, not a few loose statements appear.

The author is obviously in error when he says that special examining boards have been established in several states in a number of medical specialties, which prescribe qualifications for physicians proposing to designate themselves as specialists, conduct examinations of such physicians and issue certificates to those who pass such examinations, to indicate that they have met the requirements (p 33). No state has as yet established such a board.

The reader may easily be misled by the author's statement (pp 21-22) that a contract whereby a physician guarantees to effect a cure, to be binding, must be supported by some definite consideration, if it is meant thereby to imply that the consideration moving from the patient to the physician in such a case must be a consideration separate and apart from that which supports the physician's general contract of service. Of course a guaranty may be agreed on in an independent contract—as, for instance, when it is made after the general contract for service has been entered into—and if that is the case a consideration for that particular contract is necessary. There seems to be no reason, however, why a contract of guaranty should not be embodied in the general contract and based on the same consideration and such is believed to be the general practice when such contracts are entered into at all.

A form of release (p 40) is suggested by the author to be used for the purpose of absolving operators of x-ray apparatus and similar apparatus from liability for injuries to their patients. The form suggested covers only such injuries as occur in the course of treatment. So far as such forms of release are to be used at all they should be made to cover injuries occurring as a result of diagnostic procedures also. No release, however,

can absolve an operator of x-ray apparatus or of similar apparatus from liability for injuries caused by his own future neglect, ignorance, unskillfulness and culpably bad judgment. Releases of that character are contrary to public policy (*Hales v. Rames* 162 Mo App 46).

In the discussion of hospitals, the term "public hospital" seems to be used as synonymous with "government hospital". Many privately owned and operated hospitals are "public hospitals" in the ordinary acceptance of that term, in that they are established and maintained primarily for the benefit of the public and not for the advancement of any private interest. Probably the distinction intended by the author in his discussion of hospitals is that between private hospitals operated for profit and private hospitals—commonly referred to as charitable hospitals—no part of the net earnings of which inures to the benefit of any private shareholder and which are operated as public charities. Government hospitals are in a class by themselves.

One of the forms proposed by the author (p 227) to enable hospital authorities lawfully to disclose information concerning a patient who is or has been under treatment in the hospital provides for the authorization of such disclosure by "the nearest relative" of the patient and not by the patient himself. If the patient is a minor or is non compos mentis, presumably the parent or guardian can lawfully authorize the disclosure of information concerning him, but no legal authority is known for the authorization of such disclosures during the lifetime of the patient, by relatives when the patient is not a minor, and the right of a relative to authorize such disclosures even after the death of the patient is at least questionable. In any event, how near must the relationship be in order to confer authority to consent to disclosure, and who is to determine the authority of a professed relative in any given case? The fact that the person who signs the form authorizing the release of information is required to recite in it that he is "the nearest relative and legally responsible for the release of information with regard to such patient" is hardly conclusive.

The author's proposed form (p 97) for the release of a hospital from liability for the departure of a patient from the hospital against the advice of his physician is not clear. It implies that some one other than the patient himself is to execute it and that the patient is in fact "discharged" by the hospital authorities on the advice of some one other than the patient's attending physician. Presumably the situation intended to be met by this form is that in which the patient himself insists on leaving the hospital of his own volition, against the advice of the hospital authorities and without being discharged by them, and any such form should so state and should be executed by the patient himself.

As is too commonly the practice of legal writers who discuss expert testimony and privileged communications the author overlooks the responsibility of lawyers for such evils as exist with respect to them. It is possible that the right of a patient to make a full and free disclosure of his life in order that he may be relieved or cured of disease works an injustice to the public and to his adversary in a criminal prosecution or a civil suit oftener than does the right of a client to make to his lawyer a full and free disclosure of his life and misdeeds but that fact has not yet been shown for lawyers seldom question the sanctity of communications between lawyer and client. It is to be hoped that some day a way will be found whereby the privilege between physicians and patients and between lawyers and clients can be maintained to a degree sufficient to make available to the sick and to the criminal at all times the services of physicians and of lawyers without at the same time impeding the administration of justice. But the advent of that time will not be hastened by criticisms directed solely at the lesser part of the evil of privilege as it now exists, that is at the evil inherent in the privilege between physician and patient.

In his criticism of medical expert testimony the author apparently overlooks the facts (1) that no expert witness medical or otherwise is ever placed on the witness stand without the consent and approval of a judge who is fully authorized to exclude him (2) that except in those rare instances in which courts themselves summon expert witnesses on their own initiative no so-called expert is ever placed on the witness stand who has not previously been introduced into court by counsel who has investigated—or is supposed to have investigated—the

moral and professional qualifications of the witness and found them to be just the sort of qualifications that counsel needed, and (3) that just as long as lawyers maintain a market for the testimony of venal and incompetent so called expert witnesses, and courts set too low standards of fitness or complaisantly allow themselves to be imposed on by unscrupulous lawyers who proffer as expert witnesses men whose professional and moral unfitness the court itself might readily determine, just so long will the abuse of expert testimony in all fields continue.

The author falls into a rather dangerous error when he writes (p 155)

Of course the physician as well as any other expert may enter into such agreement as he may see fit with either a litigant or an attorney concerning the compensation which is to be paid for his services in court.

As a matter of fact any agreement or contract whereby a physician obligates himself to testify as an expert witness on condition that his compensation, if any, is to be proportionate to the amount of the award or judgment is void as against public policy (*Wenberg v Magid* (Mass) 189 N E 110) It has been held that even an agreement by which a physician is to receive for his testimony as an expert witness more than the statutory fee allowed an ordinary witness, when the physician, under the laws of the state, might have been summoned and compelled to testify without compensation other than that of an ordinary witness is void for want of consideration (*Ealy v Shetler Ice Cream Co* (W Va.), 150 S E 539) In some states, too, there are statutes regulating the fees that may be paid an expert witness, which an expert cannot safely ignore.

A physician served with a valid subpoena must appear in response to it, as the author states, but in some states it does not follow that after having responded to that subpoena he can be compelled, if he makes timely objection, to testify as an expert witness without arrangements having been made for payment for his services of fees satisfactory to him within the limits, if any, specially set by the laws governing the court in which he testifies. The rule with respect to such fees varies in the several states. In federal courts it has been held that a person cannot be compelled to testify as an expert witness unless arrangements have been made to compensate him for his services (*In the Matter of Roelker* 1 Sprague 276 *In the Matter of Major William Smith* 24 Ct of Claims Repts 209 *Cheatham Electric Switching Device Co v Transit Development Co* 261 F 792)

The foregoing criticisms have seemed to be necessary in order that persons who may be led to read or refer to this book through this review may not be misled to their detriment. It would be unfair to the author however not to recognize the large amount of labor that he has put into this volume. In later editions, no doubt, the errors that have crept into the first edition will be corrected.

Die physikalischen und technischen Grundlagen der Hochfrequenzbehandlung Diathermie Arsonvalisation Kurzwellen Von Dr Med et Phil Hans Weisz. Mit einem Geleitwort von J Kowarschik. Paper Price 3.80 marks Pp 76 with 36 illustrations Vienna Julius Springer 1935

This small brochure is written by one who has the advantage of being both a physicist and a physician. He has undertaken to present the fundamentals of high frequency therapy in a style so free from technical diction that physicians without basic training in electrophysics will at once understand the energy utilized in diathermy arsonvalization and short wave therapy. In this aim the author has attained only a modicum of success, for it is inconceivable that, by a mere perusal of definitions and an abbreviated exposition intermixed with a number of mathematical formulas, one can grasp so complicated a subject as the one here presented. However, a study of this small volume will aid the novice in overcoming the first barriers and stimulate an interest in the details of this branch of medicine. After a foreword by Kowarschik in which this well known Vienna electrotherapist briefly surveys the advances and roles of the three modalities with reference to their clinical application, the author concisely discusses the relationship of induction, alternating current, the oscillating circuit undamped oscillation and radio transmitting tubes, radiation, and passage of high frequency currents through conductors for therapeutic

purposes. The work concludes with the technical, medical and surgical applicability of high frequency currents and may be regarded as a useful primer.

John Whitridge Williams *Academic Aspects and Bibliography* By J Morris Siemons Cloth Price \$1.50 Pp 109 with one illustration. Baltimore Johns Hopkins Press 1935

The manner in which this book was written indicates the devotion and affection which the author had for the subject of this biography. The life of John Whitridge Williams is discussed from the point of view of teacher, investigator dean of the Johns Hopkins University School of Medicine, and personality. The contributions which Williams made to obstetrics in particular and to medicine and humanity in general are described in detail. Those who are fortunate enough to have come under the direct influence of Williams know full well that the encomiums showered on this beloved character are by no means exaggerated. At the end of the book are a number of bibliographies. This book is a valuable addition to the history of obstetrics, especially in the United States, and should be in the possession of every obstetrician and every medical alumnus of Johns Hopkins.

*Diseases of the Nose and Throat for Practitioners and Students.* By Charles J Imperatori M.D. F.A.C.S. Professor of Clinical Otolaryngology New York Post Graduate Medical School Columbia University New York and Herman J Burman M.D. Instructor of Clinical Otolaryngology New York Post Graduate Medical School Columbia University New York. Cloth Price \$7 Pp 723 with 480 illustrations Philadelphia London and Montreal J B Lippincott Company 1935

This textbook, written in outline form for the general practitioner, the senior medical student and those taking postgraduate work in the field of nose and throat as well, does competently what it sets out to do, namely, to describe as comprehensively as possible the diseases most frequently encountered in the two specialties. The style is clear, there are many good illustrations. The emphasis on the details of operative technique is perhaps, too great when one considers that this book was primarily not written for the specialist, who should be the only one to undertake most of these interventions. Apart from this, the work is well done and interesting not only for those for whom it was intended but for many of wider experience.

*Short Wave Therapy The Medical Uses of Electrical High Frequencies.* By Dr Erwin Schliephake Privatdozent für Internal Medicine at the University of Jena. Authorized English translation by R King Brown, B.A. M.D. D.P.H. from the second and enlarged German edition. With foreword by Elkin P Cumberbatch M.A. M.B. B.Ch. Cloth. Price 21/- Pp 238 with 94 illustrations London Actinic Press Ltd. 1934

This translated work from the German provides the English speaking profession an opportunity to evaluate critically the therapeutic development of a special range of high frequency current-hertzian short wave radiation, in which Schliephake and the German school have played such a conspicuous part. The present edition is a laudable attempt to present the author's thesis regarding the clinical value of a new therapeutic method of high frequency which requires that the subject be placed in the condenser field of a closed oscillatory circuit. The English version presents a literal but rather choppy translation of the author's studies but includes the major and important data, so that in spite of too close an adherence to the German idiom the reader is able to obtain satisfactory orientation of the subject. The exposition follows the general plan of the original text and includes (1) a general survey of the nature and development of short electric waves for medical application, (2) experimental evidence of its thermal and selective influence on laboratory and human material (3) its physiologic and pathologic effects on animals and men (4) its effect on pathologic processes (5) and evidence of its clinical value in a large variety of diseases. While it is appreciated that the translator has taken great pains to render English speaking physicians a valuable service we note deviations from the original which will be keenly felt by those especially interested in scientific and literary details. As an example, the exhaustive bibliographic references in the original volume have unfortunately been greatly reduced in this version to the detriment of readers interested in collateral studies. No reason is given for the elimination of a large number of authors and titles. It is also regrettable that the translator has failed to provide an adequate index which would have enhanced the value of this edition.

**Individual Exercises Selected Exercises for Individual Conditions** By George T. Stafford M.S. Director Corrective Physical Education University of Illinois Harry B. DeCook M.A. Director Corrective Physical Education Northwestern University and Joseph L. Picard M.S. Director Corrective Physical Education University of Arizona Paper Price \$1 Pp 111 with 100 illustrations New York A. S. Barnes & Company Inc., 1935

This small book on individual exercises is one of the biggest bargains ever offered. It was written by three well qualified men and presents the subject in readable and instructive form. The authors have avoided technical language and have presented basic information on exercises for individual needs. The physician, physical therapist and physical educator will find the book helpful in selecting exercises for a large number of conditions that ordinarily respond to this form of treatment. The volume contains many interesting line drawings.

**Genetics** By H. S. Jennings Henry Walters Professor of Zoology in the Johns Hopkins University Cloth Price \$4 Pp 373 with 70 illustrations New York W. W. Norton & Company Inc. 1935

"Genetics" is for most technically untrained readers a sealed book. Professor Jennings offers here those features of genetics of which every educated person should have knowledge. His book is in other words, a brief outline of this subject made as simple as it can be made for the intelligent reader. He discusses the basis of genetics, its relation to the development of characteristics, the rules and ratios of inheritance and genetic variations. Notwithstanding the efforts at simplification, the book is difficult and certainly not usable by any one below college age. Even in these instances the reader must have some fundamental knowledge of biology to get much out of the work.

**Nutrition of Mother and Child** By C. Ulysses Moore M.D. M.Sc. F.A.C.P. Director Nutritional Research Laboratory University of Oregon Medical School Portland Oregon. Fourth edition Cloth Price \$2 Pp 258 with 46 illustrations Philadelphia & London J. B. Lippincott Company 1935

Since its initial appearance in 1923 this book has been rewritten so as to include added information concerning allergy, acid base balance, mineral employment, protein requirements, and vitamins. Further stress is put on the necessity, as well as the possibility, of every mother nursing her baby, and explanations are given to make this possible. There is no effort to have the book replace the physician but, rather, there is a constant emphasis on the need for medical consultation. Infant feeding formulas and schedules outlined in the earlier editions have been omitted. The book should be found useful to all who are interested in the nutrition of the mother and her baby. Recipes are appended which the mother will find of some value.

**Man and Women The World Journey of a Sexologist** By Magnus Hirschfeld English version by O. I. Green Cloth Price \$4 Pp 324 with 14 illustrations. New York G. P. Putnam & Sons 1934

Hirschfeld, the distinguished sexologist who prepared this volume, is now dead. The book represents perhaps a swan song for a man whose contribution to a difficult field was exceedingly great. Dr. Hirschfeld traveled throughout the world before his death and was everywhere recognized as one who had contributed greatly to medical science and to human happiness. His book will rank high among travel books because he viewed life understandingly. Readers will find it not only informative along the lines of Dr. Hirschfeld's chief interest but also a most interesting book of travel.

**Vitally A Book on the Health of Women and Children** By Elizabeth Sloan Chesser M.D. Cloth Price \$2.50 Pp 254 New York Oxford University Press 1935

Book stores are filled with volumes of books intended to educate mothers in the signs and symptoms of disease and many of them contain advice which it is hoped will influence mothers to call a doctor early in cases of illness. Many times, however, such books have the opposite effect and lead to self diagnosis and medication with obviously harmful results. In general the information given in this book will not encourage self medication. The material concerning the hygiene of the sickroom will be found especially valuable for mothers. A description is given of many common ailments in language that will be understood by some mothers but not by the majority.

At times the material is inaccurate and the advice given is not that which is generally accepted as sound. However, the volume does contain useful information about health and sickness, and mental and physical hygiene.

**Grundzüge der praktischen Seelenheilkunde** Von Dr. med. Fritz Kunkel Boards Price 6.75 marks Pp 168 Stuttgart and Leipzig Hippokrates Verlag G.M.B.H. 1935

This small volume gives a brief survey of the general disturbances of character occurring in so-called diseases of the mind and a brief outline of the various methods of therapy possible. The material is insufficient for an understanding of the basis of various therapeutic methods from the theoretical side, and also insufficient for an individual who wishes to learn the methods of treatment. The book does not perform any particularly useful purpose, for it simply reiterates what can be found in much more illuminating fashion in other works.

**Food and Beverage Analyzes** By Milton Arlenden Bridges B.S. M.D. F.A.C.P. Director of Medicine Department of Correction Hospitals New York Fabrikoid Price \$3.50 Pp 246 Philadelphia Lea & Febiger 1935

Here in an excellently printed handbook, nicely bound, are available complete tables of nutritive and caloric values of foods, corrected according to the most recent data, as well as brief discussions of the essentials in the food field. The book is a most valuable reference for those interested in modern dietetics.

**Russell A. Hibbs Pioneer in Orthopedic Surgery 1869-1932** By George M. Goodwin Cloth Price \$2 Pp 130 with 17 illustrations New York Columbia University Press 1935

Like the man it discusses, this book is an inspiration. The principles that Hibbs enunciated and taught constitute a milestone in the progress of orthopedic surgery. He was a pioneer, a surgeon and a teacher. His contributions have been invaluable to general, industrial and orthopedic surgeons. He was a pioneer in the field of fusion operations. He did more than any other man to teach the profession the value and technique of operative fusion on the spine, hip, knee and ankle. His work on tuberculosis of bones, joints and lateral curvature of the spine is classic. Several of his epoch-making papers are reproduced.

**Introduction à la chirurgie thoracique** Par E. E. Jaurès Preface du Professeur Proust Paper Price 20 francs 1p 11. Paris Masson & Cie 1935

This monograph is intended to act simply as an introduction to thoracic surgery, acquainting the reader with what can be done and what has been done and then allowing him should he so desire to investigate further. There is no bibliography. The French is simple and easily readable. It is doubtful whether there is a great field for a book exactly of this type, completely devoid of bibliography and illustrations and treating the subject matter superficially.

**The Proceedings of The Charaka Club Volume VIII** Half cloth Price \$5 Pp 202 with illustrations New York Columbia University Press 1935

This new volume contains some of the proceedings of the Charaka Club including particularly some fine contributions by George D. Stewart, Samuel W. Lambert, Francis Packard, Bernard Sachs, Casey A. Wood, Archibald Malloch, Frederick Peterson and Robert L. Dickinson. These materials deal largely with the history of medicine and medical letters, the material being presented in beautiful form. It merits the attention of all those interested in these fields. Certainly any one to whom the previous volumes have been available will want to complete his collection of these documents.

**The Vitamin A Content of Sour Cream Butter Sweet Cream Butter and Margarine** By I. L. Hathaway and H. P. Davis College of Agriculture University of Nebraska Agricultural Experiment Station Research Bulletin 79 Paper Pp 8 with 3 illustrations Lincoln Nebraska 1934

The chemical analysis of nineteen samples of margarine is given and their vitamin A content is compared with that of sour cream and sweet cream butter. The margarine were very poor sources of vitamin A as compared to butter. The fat content of the butter varied from 80.2 to 81.5 per cent of the margarine from 78.3 to 89.2 per cent.

## Bureau of Legal Medicine and Legislation

### TAXATION OF PHYSICIANS AND HOSPITALS UNDER THE SOCIAL SECURITY ACT

The Social Security Act<sup>1</sup> imposes no taxes on physicians and hospitals as such, but the taxes that it imposes on employers and employees affect in those relationships physicians and, with certain exceptions, hospitals. No taxes are imposed on account of employment by or in the service of a hospital, clinic or dispensary, if it is organized and operated exclusively for charitable, scientific or educational purposes and no part of its net earnings inures to the benefit of any private shareholder or individual. Neither such an institution nor physicians employed by it are liable for taxes on account of salaries or fees paid or received. But a hospital, clinic or dispensary, organized and operated for profit, is taxable even though a profit does not result from its operations. No tax is imposed on an employer of labor for purely domestic service, or of casual labor not in the course of the employer's business, or of agricultural labor, or of labor performed by persons 65 years or more of age. The taxes imposed by the act apply to a physician as an employer, in the course of his practice, only when he has one or more persons in his employ in connection with his professional activities.

Taxes on taxable employers are imposed in two categories, (1) taxes on all employers and (2) taxes on employers of eight or more persons, subject in both classes to the exceptions stated above. An employer may be taxable in both categories.

**Taxes Payable by All Employers.**—Under the caption "Taxes with Respect to Employment," title VIII of the act imposes an excise tax on every taxable employer, *regardless of the number of persons employed by him*. This tax is a stated percentage of the wages paid by the employer after Dec. 31, 1936, to the employee or employees in his service after that date. The term wages includes all remuneration paid either in cash or in some other medium, except that the wages of an employee are not subject to tax as to that portion which exceeds \$3,000 a year. The tax is at the rate of 1 per cent of the wages paid with respect to employment in 1937, 1938 and 1939. In 1940, and every fourth year thereafter, the rate increases 0.5 per cent until 1949, when the maximum rate, 3 per cent, is reached. This is to be the fixed rate of taxation thereafter. Under this title of the act, but not under the title next following, discussed below, a correlated income tax of similarly varying percentages of wages received is imposed on employees, which the employer must collect and pay to the federal government, by deductions from wages when and as he pays them.

The taxes collected under title VIII of the Social Security Act, described above, are intended to be used for the payment of the federal old age benefits authorized by title II of the act. Employees of hospitals, clinics and dispensaries who are not taxed under title VIII of the act are not entitled to such benefits. As taxes under this title are not payable on account of employment during the year 1936, more detailed consideration of them can be postponed until a later date.

**Taxes Payable by Employers of Eight or More.**—Under the caption "Tax on Employers of Eight or More," title IX of the Social Security Act imposes on every employer of eight or more persons except those within the exempted classes described above, an excise tax with respect to employment. In this case, however, the tax is to be levied on the entire wage of the employee, regardless of its amount. A salary and bonus of \$250,000 a year is taxed at the same rate as is a wage of \$500 a year. This tax during the calendar year 1936 is at the rate of 1 per cent of the total wages paid by the employer. In 1937 it is to be 2 per cent, and every year thereafter 3 per cent. The taxes collected under this title of the act, and similar taxes raised by the several states, are to be used for the payment in cash of unemployment benefits to eligible unemployed workers in accordance with the terms of state unemployment laws.

The taxpayer under this title is entitled to take credit each year against the federal taxes payable by him under title IX of the Social Security Act, for the amount he has paid on account of unemployment benefits, during the corresponding taxable year, into a state unemployment fund, if the state law under which these payments have been made is acceptable to the Social Security Board, except that the credit claimed by the taxpayer cannot exceed 90 per cent of the federal tax and no part of a contribution that an employer has made to a state unemployment fund can be used as a credit against the federal tax if the employer has deducted or proposes to deduct it from the wages of his employees. If the federal Social Security Board declines to approve a state unemployment insurance law or if a state has no such law, the entire tax paid by employers in that state under this title goes into the federal treasury, and no unemployed person in that state receives any benefit under this title.

**Regulations Governing Collection of Taxes.**—The Commissioner of Internal Revenue is authorized to promulgate such regulations as may be necessary to facilitate the collection of the taxes imposed by the Social Security Act. Under title IX, imposing taxes on employers of eight or more employees, proper records of salaries and wages paid during the current calendar year 1936 must be kept, but no tax is payable until Jan. 31, 1937, and the tax on salaries and wages paid in the tax year 1936 can then be paid in a lump sum or in four equal quarterly instalments, as a taxpayer elects. The pertinent part of the regulations issued by the commissioner with respect to the records to be kept under title IX is appended. These regulations prescribe no particular method of accounting or record keeping, it is sufficient that they clearly and accurately show the required information. Forms to facilitate the keeping of such records are now on the market, and since the accounting problems confronting physicians and hospitals as employers differ in no way from similar problems confronting other employers, no effort is made here to advise or suggest forms for use.

Recent decisions of the United States Supreme Court cast doubt on the constitutionality of the Social Security Act, in part or in its entirety. It is to be presumed constitutional, however, until the Supreme Court has spoken, and until that time physicians and hospitals affected by the act will do well to follow its mandates as they are now written.

### Regulations Issued by the Commissioner of Internal Revenue, Dec. 20, 1935

Art. 2. (a) Every person subject to tax under the Act shall during the calendar year 1936 or any calendar year thereafter for each such calendar year keep such permanent records as are necessary to establish:

(1) The total amount of remuneration payable to his employees in cash or in a medium other than cash showing separately (a) total remuneration payable with respect to services excepted by section 907 (c) (2) (b) total remuneration payable with respect to services performed outside of the United States (c) total remuneration payable with respect to all other services.

(2) The amount of contributions with respect to employment during the calendar year paid by him into any State unemployment fund showing separately (a) payments made and not deducted (or deductible) from the remuneration of employees (b) payments made and deducted (or deductible) from the remuneration of employees (c) payments made with respect to services excepted by section 907 (c) (2).

(3) Such other information as will enable the Commissioner to determine whether such person is subject to the tax and if subject to the tax the amount thereof.

(b) No particular method of accounting or form of record is prescribed. Each person may adopt such records and such method of accounting as may best meet the requirements of his own business, provided that they clearly and accurately show the information required above and enable him to make a proper return on the prescribed form.

(c) Records are not required to show the number of individuals employed on any day but must show the total amount of remuneration actually paid during each calendar month and the number of individuals employed during each calendar month or during each such lesser period as the employer may elect.

(d) Any person who employs individuals during any calendar year but who considers that he is not an employer subject to the tax should be prepared to establish by proper records (including where necessary records of the number of persons employed each day) that he is not an employer subject to the tax.

2 Section 907 (c) defines the classes of employers and employees exempted from the taxes discussed. These classes have been stated in this article.

"Art. 3 All records required by these regulations shall be kept safe and readily accessible at the principal place of business of the person required to keep such records or at such other place or places as the Commissioner upon written application by the person concerned may approve. Such records shall at all times be open for inspection by internal revenue officers, and shall be preserved for a period of at least four years from the due date of the tax for the calendar year to which they relate."

## MEDICOLEGAL ABSTRACTS

**Malpractice Acute Urethritis Following Instrumentation by Drugless Practitioner**—The defendant, McCoy a drugless practitioner, in treating the plaintiff for gonorrhea, on December 14, inserted an "ultraviolet ray official applicator, also called a cold quartz rod" into the urethra and turned on an electric current for a few seconds. He also placed a diathermy electrode in the rectum, with a metal plate near the small of the back, and heated the electrode to 102 F. One of McCoy's employees, a chiropractor repeated this treatment four times within the next six days. On the evening of December 20 the patient called in a nonsectarian practitioner, who found it impossible for the plaintiff to urinate. For twelve hours various means were used unsuccessfully to open up the urethra and induce urination. An operation was then performed by Dr. Dowe and Dr. Willis and the bladder drained by means of a tube, which was kept connected through an abdominal incision for three weeks, until the urethra had been healed sufficiently to allow urination.

At the trial of an action for malpractice, which the plaintiff subsequently instituted against McCoy Dr. Dowe testified that prior to the operation the plaintiff was suffering from acute urethritis of apparent traumatic origin from mechanical instrumentation, thermal injury of ultraviolet origin, and acute cystitis both bacterial and traumatic. After the operation, he testified, a good deal of tissue within the urethra sloughed out, which indicated to him that the tissue within the urethra and a portion of the bladder had been so traumatized that it died, and that the plaintiff had suffered third degree burns of both the urethra and the bladder. He further stated that "the phenomena which presented themselves clinically in his case were not characteristic of a noncomplicated gonorrheal urethritis. They were characteristic of a case which had been traumatized through brutal instrumentation." Dr. Willis testified "that the retention of urine was due to photothermic destruction of the lining membrane and inflammation of the cavernous urethral structure from prolonged application of the ultraviolet light." On behalf of the plaintiff a specialist in urology also testified, in response to a hypothetical question, that in his opinion the plaintiff had been too vigorously treated and burned with the diathermy or the violet ray. The jury returned a verdict in favor of the plaintiff for \$7,500 and from a judgment entered thereon the drugless practitioner appealed to the district court of appeal, second district, division 1, California.

The defendant seemed to contend that the evidence adduced at the trial was not sufficient to sustain the verdict. With this contention, however, the district court of appeal did not agree. From the testimony of the operating physicians said the court as to the condition of the plaintiff's urethra after the treatment given by the defendant, the jury was thoroughly justified in finding that the plaintiff had suffered severe injury. The duty which the defendant owed to his patient has been thus stated in *Hesler v California Hospital Co* 178 Calif 764 174 P 654.

A practitioner is, however, required by law to use the same degree of care, diligence and skill in the treatment of his patients as is possessed and used by prudent, skillful and careful practitioners of the same school practicing in the same vicinity.

If the condition of the plaintiff was as testified to by Dr. Dowe, a condition which in itself indicated that this was a case which had been traumatized through brutal instrumentation "it can hardly be said that the defendant used the care and skill required by the law. The jury was warranted in finding accordingly, if they believed the testimony."

The defendant next contended that the trial court should not have permitted the physicians called by the plaintiff to testify,

since they were not drugless practitioners. In answering this contention, the court quoted from *Hutter v Hommel* 213, Calif 677, 3 P (2d) 544, as follows:

"We might add that we are cited to no rule obtaining in this jurisdiction and know of none which would preclude a physician trained in one medical school from testifying in a proper case as to the treatment rendered by a physician or surgeon trained in a different school. Such a rule might be promulgated where charges of negligence in a malpractice case are directed toward some special course of treatment to be tested by the general doctrine of a particular school but it is not applicable to a case of this character where the alleged malpractice is based upon general charges of negligence relating largely to matters of almost common observation within the experience of every physician and surgeon."

The judgment in favor of the plaintiff was accordingly affirmed.—*Ellmwood v McCoy*, (Calif), 47 P (2d) 796.

**Constitutionality of Washington Basic Science Act**—Wehinger was prosecuted for attempting to practice chiropractic in Washington without a license. It was stipulated that he was graduated from a "qualified" chiropractic school, that he was not licensed to practice chiropractic in Washington, and that he could not have been examined for a license, even had he applied, by the chiropractic examining committee until he had first passed an examination before an impartial board in the basic sciences. By inadvertence, the stipulation contained a statement that the basic sciences were "equivalent to materia medica" but the trial court decided to disregard this statement. The defendant was found guilty and, from a denial of a motion for an order in arrest of judgment or for a new trial, the defendant appealed to the Supreme Court of Washington.

The chiropractor's main contention seemed to be that the Washington basic science act, as applied to chiropractors, was unconstitutional because it required chiropractic applicants to pass examinations in subjects that bore no relation whatever to "the functions of chiropractic healing." The basic science law, said the Supreme Court, requires applicants for a license to practice any form of the healing art, including chiropractic before presenting themselves to their respective professional examining committees to pass examinations, to be given by an impartial board in anatomy, physiology, chemistry, pathology and hygiene. The chiropractic practice act also requires applicants to pass examinations in anatomy, physiology, hygiene, symptomatology, nerve tracing, chiropractic orthopedy, principles of chiropractic and adjusting. It is thus plain that only two subjects, viz, chemistry and pathology, are included in the basic science law which are not included in the chiropractic practice act. The court believed that pathology, in which the basic science act requires applicants to be examined, and symptomatology, in which the chiropractic act required chiropractic applicants to be examined were practically identical subjects. Webster's New International Dictionary, said the court, defines pathology as the "science treating of diseases their nature, causes, progress, manifestations and results," and symptomatology as "the doctrine of symptoms, that part of medical science treating of symptoms of diseases, semeiology." The inclusion of pathology in the basic science act was reasonable, since if a practitioner cannot ascertain the character of an ailment he cannot intelligently treat it. Furthermore no one can justly say that the addition of chemistry to the list of subjects as one of the basic sciences on which applicants to practice chiropractic are required to have some knowledge is an unreasonable requirement. A chiropractor, therefore, is deprived of no constitutional rights by being required, before receiving a certificate to practice his profession, to demonstrate an adequate knowledge of the subjects enumerated in the basic science act.

The court also held that the trial court acted within its power in disregarding that provision of the stipulation to the effect that the basic sciences were "equivalent to materia medica." It is obvious that the statement was erroneous and was inadvertently made. The court intimated however that it might not uphold the validity of a law which would attempt to require applicants for chiropractic licenses to pass examinations on subjects outside the scope of their practice or which have no relation whatever to chiropractic such as materia medica. Such a law the court intimated, would be a denial of liberty and due process of law.

The conviction of the chiropractor was accordingly affirmed.—*State v Wehinger* (Wash), 47 P (2d) 35.



## Society Proceedings

### COMING MEETINGS

American College of Physicians Detroit Mar 2-6 Mr E. R. Loveland  
133 South 36th Street Philadelphia Executive Secretary  
American College of Radiology, Chicago, Feb 16 Dr Benjamin H.  
Orndoff, 2561 North Clark Street, Chicago, Executive Secretary  
American Heart Association New York February 3 Dr H. M. Marvin  
50 West 50th Street, New York, Acting Executive Secretary  
American Orthopsychiatric Association Cleveland Feb 20-22 Dr George  
S. Stevenson 50 West 50th Street New York Secretary  
Annual Congress on Medical Education Medical Licensure and Hos-  
pitals Chicago Feb 17-18 Dr W. D. Cutler, 535 North Dearborn  
Street Chicago Secretary  
Southeastern Surgical Congress, New Orleans March 9-11 Dr Benjamin  
T. Beasley 478 Peachtree Street N.E. Atlanta Ga Secretary  
Western Section American Laryngological Rhinological and Otolological  
Society Del Monte Calif Feb 12 Dr Carroll Smith Paulsen  
Building Spokane Wash Chairman

### CENTRAL SOCIETY FOR CLINICAL RESEARCH

*Eighth Annual Meeting held in Chicago Nov 1 and 2 1935*

The President, DR CYRUS C. STURGIS, Ann Arbor, Mich.,  
in the Chair

(Continued from page 248)

#### Associated Diabetes Mellitus and Pulmonary Tuberculosis

DRS RICHARD M. MCKEAN and GORDON B. MYERS, Detroit  
This study is based on 100 cases of coexisting diabetes and tuberculosis, which were under observation for an average period of 581 days, including an average hospital stay of 336 days. In 80 per cent of these the tuberculosis was classified as far advanced. Cavitation was demonstrable in 90 per cent. The composition of the average diet was as follows: carbohydrate 111 Gm., fat, 165 Gm., protein, 64 Gm., total calories daily, 2,187. This diet furnished an average of 34 calories per kilogram and was sufficient to permit an average weight gain of 7.5 kilograms. The energy requirements calculated in percentage over and above the basal, fell within the estimated range of normal in the majority of cases of diabetic tuberculosis. The routine medical treatment of tuberculosis was used exclusively in twenty-seven cases and was supplemented by collapse therapy in seventy-three. Unilateral pneumothorax was induced in fifty-three cases, bilateral in five. Phrenic nerve surgery was performed in forty cases, thoracoplasty in two and pneumolysis in one. Fifty patients are dead, all but three from tuberculosis. To date, an arrest or an apparent arrest has been obtained in 56 per cent of the moderately advanced cases and in 19 per cent of the far advanced cases. The results in this group of cases of diabetic tuberculosis compare favorably with the results obtained at the same hospital in nondiabetic tuberculosis of like severity. It would appear that as long as the diabetes is carefully controlled it does not have an adverse effect on the course of pulmonary tuberculosis.

#### Action of Drugs on Induced Ventricular Rhythms

DR M. H. NATHANSON, Minneapolis. Epinephrine acts on the heart to raise the rhythmicity of ventricular foci leading to ectopic ventricular rhythms. There is evidence that epinephrine plays an important part in the genesis of ventricular fibrillation. The purpose of the present study was to determine the efficiency of drugs in counteracting this action of epinephrine. Ventricular beats from multiple ventricular foci were induced in patients by the intravenous injection of 0.1 mg. of epinephrine. Various drugs were then administered and after a suitable interval the same dose of epinephrine was repeated. It was found that these ventricular rhythms could be reproduced by intravenous epinephrine after the administration of ergotamine potassium salts, quinine and barbiturates. They were effectively prevented by quinidine and acetylcholine.

#### DISCUSSION

DR WILLIAM B. KOLNITZ, St. Louis. I have studied coronary flow in revived perfused human hearts and have used a number of these drugs. I have in many instances used epinephrine in reviving the hearts and later have been much interested in stop-

ping the foci arising in the ventricle, some of which may have been the result of the epinephrine and others simply apyretic foci in the heart. I have found that there were two chief types of drugs that would change the action of epinephrine or would prevent the development of ventricular extrasystoles. One type consisted of drugs that increase the coronary artery flow, and the other type drugs that would decrease the irritability of the ventricle, quinidine and acetylcholine, falling into the latter group. I would suggest that, in addition to the drugs which depress the ventricular irritability, those which dilate the coronary arteries will also modify the action of epinephrine.

DR M. H. NATHANSON, Minneapolis. I have done only one experiment on the effect of epinephrine before and after the giving of a theophylline compound. In that case I injected 0.24 Gm. of theophylline intravenously and then observed the reaction and found that it was not modified.

#### Effects of Alkalosis and Acidosis on the Electrocardiogram

DR PAUL S. BARKER, Ann Arbor, Mich., DR E. LE SHRADER, St. Louis, and ETHEL RONZONI, PH.D., St. Louis. The observation of transient inversion of the T waves during hysterical hyperventilation prompted this investigation. Alkalosis, produced by hyperventilation and by ingestion of sodium bicarbonate, was accompanied by flattening or inversion of the T waves. Acidosis, produced by exercise and by ingestion of ammonium chloride, was accompanied by an increase in the amplitude of the T waves. The relation of the T wave changes to changes in the pH of the venous blood, while by no means close, was fairly consistent throughout the series of experiments. Normal adults served as subjects, and adequate control observations were made.

#### Effect on Heart of Experimental Pleural Conglutination

DRS HORACE M. KORN, HARRY LANDT, O. R. HYNDMAN, RAYMOND GREGORY and C. N. COOPER, Iowa City. The ancient assumption that pleural obliteration (as well as many other chronic diseases of the thorax or respiratory organs) leads to selective right ventricular hypertrophy was investigated experimentally. Seventeen dogs were allowed to survive for periods ranging from five to twenty-eight months after pleural conglutination of varying extent had been produced. The ventricles were separated by Herrmann's method and the left ventricular weight, right ventricular weight (L/R) ratios compared with Herrmann's L/R ratios for normal dogs' hearts. The results indicate that, in the dog, conglutination averaging 34 per cent (maximum 65 per cent) of the total pleural area does not cause hypertrophy of the right ventricle.

#### The Specific Etiology of Whooping Cough

DR GERALD S. SHIBLEY, Cleveland. Although it is fairly generally believed that whooping cough is caused by *Haemophilus pertussis*, there are many who still insist that the disease may be caused by a filtrable virus or that a virus accompanies the pertussis organism to produce the disease. The few successful transmission experiments with pertussis organisms have all been open to the criticism that a virus might have been present. By developing methods of identification of the virulent form and of its maintenance in this form in the laboratory, it is possible to carry virulent strains long enough to preclude the presence of virus. With such strains maintained as long as two years in the laboratory, it has been possible to produce typical whooping cough in several chimpanzees. The disease in these animals was characteristic clinically, bacteriologically, hematologically and at postmortem examination. In support of the clinical manifestations of the disease, phonograph records of typical paroxysms in chimpanzees have been obtained. These successful transmission experiments with virus-free *Haemophilus pertussis* lead to the conclusion that this organism is the sole cause of whooping cough.

#### Pneumococcus Serum to Which Heterophile Antibody (Forssman) Has Been Added

DRS LAWRENCE D. THOMPSON and EMMET KELLY, St. Louis. During the past winter opportunity was offered to treat alternate cases of pneumonia as they appeared in the City Hospital wards with a new (Lilly) heterophile antipneumococcus serum. Forty-two patients received serum treatment and a control group of

fifty patients received no serum. The series has been analyzed on the basis of age incidence, type of pneumococcus, day of administration of serum in relation to day of onset of disease, and many other clinical factors of interest. The series is too small for the results to be conclusive. The evidence, however, suggests that such serum may be a definite improvement over other types of serums.

#### DISCUSSION

DR LEE FOSHAY, Cincinnati. I wonder whether the controls for these series were really adequate. I should like to see patients with typed pneumonias divided three ways instead of two: one group given no serum at all, one given Felton's serum alone, and one given Felton's serum plus the heterophile antibody. Otherwise how is a true comparison obtained? I would not wish to say that heterophile antibody is without effect, but I think it would be more convincing if in another test the patients were divided into three groups.

DR MOSES BARRON, Minneapolis. In addition to this criticism of Dr Foshay, there are some things in this paper that show one has to be careful in drawing conclusions. It is generally admitted that treatment with antipneumococcus serum after the third or fourth day of the illness does not give much result. In the series presented there was shown great improvement from the serum even from the fifth to the eighth day of the disease. One should therefore be hesitant about drawing conclusions from this series.

DR EMILY KELLY, St. Louis. I recognize that we have to be cautious in making any statements about the efficacy of the serum, and I hope we have. With regard to the suggestion of dividing the pneumonias into three groups, we are particularly interested in the action of the serum in types III and IV. Felton's serum has not been of much value in these types.

#### Mechanism of Postsplenectomy Erythroid Reequilibrations

DRS CARL V MOORE and CHARLES A DOAN, Columbus, Ohio. Splenectomy performed as a therapeutic measure in the treatment of congenital hemolytic icterus, whether the disease is chronic, subacute or in actual hemoclastic crisis, is constantly attended by an immediate and a sustained elevation in the peripheral erythrocyte level by a million or more cells (Doan, Curtis and Wiseman, *THE JOURNAL*, Nov 16 1935 p 1567). In contrast, the rise that occurs in patients with hypoplastic anemia at the time of splenic extirpation is not constant, is of lesser degree, and is not sustained. An adequate understanding of the mechanisms responsible for these phenomena is dependent on actual measurement of changes in the circulating blood plasma and cell volumes. In the present study a fall in plasma volume of from 10 to 35 per cent with resultant concentration of the formed elements present in the blood stream was observed in practically all instances of splenectomy and was sufficient to affect the whole of the transient peripheral erythrocyte rise usually observed in cases of hypoplastic anemia. The rise obtained at the time of splenectomy for congenital hemolytic icterus, on the other hand, was only partly explained by such a concentration phenomenon and was more particularly the result of an actual increase of from 150 to 450 cc in erythrocyte volume. That these added cells are probably delivered from the spleen at the time of operation seems likely, since a comparable increase in circulating erythroid elements was observed following epinephrine-stimulated splenic contraction in our patients with splenomegaly from various causes and in certain animal experiments particularly those with the sheep. The change was not obtained after epinephrine in adults with normal spleens or in subjects on whom splenectomy had previously been performed. It is suggested, therefore, that the immediate increase in the volume of circulating red blood cells that was first noted when splenectomy was performed in individuals with congenital hemolytic icterus is a phenomenon not necessarily peculiar to this disease but one that is dependent rather on the size of the spleen, the structure and function of its cells and the contractility of its musculature. The results however in hemolytic icterus are unusually spectacular because elimination of the hemolytic element by splenectomy makes at once more effective the bone marrow formation and delivery of cells.

The fall in plasma volume may be attributed to the following factors: (1) loss of the reservoir fluid volume of the spleen itself, (2) a possible obstruction to the venous outflow from the liver when epinephrine is used (P. D. Lamson) with resultant increase in the lymph flow from that organ and consequent plasma loss, and (3) diaphoresis at the time of operation as the result of a mild shock phenomenon. The latter effect was observed in other moderately severe abdominal operative manipulations to a degree comparable to that recorded in our cases of splenectomy with plasma volume decrease.

Blood volume determinations throughout these investigations were made with the method employing brilliant vital red dye, measurements of dye concentration in plasma were read spectrophotometrically.

#### DISCUSSION

DR MOSES BARRON, Minneapolis. Some of the results in this paper are borne out by a case which I saw during the past week. A woman with a very large spleen, the cause of which had not been definitely diagnosed but which was probably some form of leukemia or reticulosis had a blood picture showing a marked anemia, from 40 to 50 per cent hemoglobin, and from 2 to 3 million red cells, with a marked leukopenia, ranging from 1,000 to 850 leukocytes. She was observed for a few weeks and then the spleen was removed. She was given epinephrine just before the removal of the spleen and a definite shrinkage of the spleen on the operating table was visible. Three days after operation the hemoglobin went up to 70 per cent and the leukocyte count to 7,500, so there must have been an enormous extrusion of red blood cells into the circulating blood to bring about such an unusual rise in hemoglobin and white cell count so soon after operation.

DR CARL V MOORE, Columbus, Ohio. Splenectomy apparently does not effect any immediate change in the peripheral reticulocyte level, the reticulocytes fall steadily but gradually to normal over a period of days. With respect to the citation of one case of congenital hemolytic icterus that did not respond in the manner described, we can only say that in fifteen consecutive cases of the disease, five of which were in hemoclastic crisis, the phenomenon of immediate peripheral erythrocyte increase on the day of operation occurred in all cases. It is to be re-emphasized that in conditions other than hemolytic icterus the changes in the hematopoietic equilibrium brought about by splenectomy have been neither so constant nor so spectacular.

#### Hypophysectomized Animals After Exposure to Reduced Atmospheric Pressure

DR OVID O MEYER, GERTRUDE E STEWART and ETHEL W THEWLIS, Madison, Wis. Following hypophysectomy the reticulocytes in the blood of rats are diminished and a low level is persistent. When these animals are placed in a chamber and exposed to a barometric pressure of 422 mm of mercury, equivalent oxygen tension 12 per cent of an atmosphere, corresponding altitude 16,000 feet, there is no demonstrable increase in the reticulocytes, whereas a sharp increase is regularly noted in control animals. If the hypophysectomy has been done eight or nine days before exposure to the reduced pressure, polycythemia results comparable to that of the controls. If the hypophysectomy is done from twenty-five to thirty-two days before, there is no significant increase in the hemoglobin or number of erythrocytes under the same experimental conditions. Examination of the bone marrows of hypophysectomized animals shows a lack of the profound hyperplasia regularly found in the controls. Orchidectomized and thyroidectomized rats exhibit a response analogous to that of normal animals.

#### Experiments on the Distribution of Red Bone Marrow

DRS C B HIGGINS, B H BLOCKSON JR and W J NOONAN, Chicago. These experiments were concerned with the distribution of erythropoietic bone marrow and its centripetal regression (E. Neumann). A gradient of erythropoiesis exists in the extremities of mammals and birds. By means of thermocouple technique it was found that a thermal gradient exists in the marrow of the extremities roughly similar to that of the surrounding muscles. With normally fatty marrow as an indicator (especially the rat tail) several experiments were devised in which a common factor was elevation of the temperature of the

marrow over many days, and it was found that a marked increase of hematopoietic as well as macrophage cells resulted in the experimental bone marrow

### The Filament Nonfilament Leukocyte Count

DRS B E GOODRICH and F JANNEY SMITH, Detroit  
Counts of 200 cells were made every few days in fifteen consecutive cases after coronary artery occlusion. Results of these counts were contrasted in recovered and fatal cases. A nonfilament percentage curve not above 24 per cent in the first ten days following occlusion and an eosinophil percentage curve above 2 per cent are interpreted as favorable prognostic indications. A higher nonfilament percentage, ranging between 26 and 40, and less than 1 per cent of eosinophils in daily counts over the same period would suggest an unfavorable outcome. The nonfilament and eosinophil percentage curves afford greater prognostic information in myocardial infarction than does the total leukocyte count.

### DISCUSSION

DR F JANNEY SMITH, Detroit  
About a year ago Dr Cooksey emphasized before this society that the prognosis after coronary occlusion was somewhat better in the younger group of individuals than it was in the older group. Other than age, whether or not the patient recovers following an acute attack of coronary occlusion depends in the main on the size of the infarction. We hope by following out these counts in our cases that this information may give us added help in determining whether or not the patient has a small or large area of infarction and therefore assist in determining the prognosis. I believe from our limited experience that it is desirable to follow these curves for eight or ten days after the coronary occlusion before attempting to estimate the probable severity of the infarction on the basis of this information.

DR W B COOKSEY, Detroit  
Those of us who see patients and patients' families most of the waking hours of our lives consider the prognosis in coronary occlusion a very important thing. Most of the patients that I see I am not able to hospitalize. I am afraid to hospitalize many of them. When I see them in their homes, they are usually so critically ill that it seems to be adding some danger to attempt to move them. With portable electrocardiographs, oxygen tents and other adjuncts to treatment so easily available, I fail to see that hospitalization has very much to offer. Consequently, I have treated most of my cases of coronary thrombosis at home. However blood studies are not so easily available in the home, and I have no experience in this phase of the problem. The work of Dr Goodrich and Dr Smith has contributed added knowledge of what is going on. In the home I think I can tell what is going to happen by the height of the temperature rise, by the number of days it exists, particularly when I take into consideration what happens to the blood pressure. I believe that if the temperature has reached 102 and stayed there for several days or if the temperature has persisted at 101 for seven eight or nine days, associated with a considerable fall in blood pressure the outcome is more apt to be fatal for the reason Dr Smith has mentioned, that it indicates a larger anemic infarct. I should like to hear Dr Goodrich or Dr Smith comment on what the temperature curve has been in these cases. Another matter that has interested me is this. Some fatal cases in which intramural thrombosis existed seem not to have shown appreciable fever and have misled me sometimes. I should suspect that these cases of intramural thrombosis without anemic infarct which fail to exhibit a fever, might likewise fail to show a high nonfilament count. I cannot help making a report in connection with the paper I gave last year on prognosis following coronary thrombosis, since a number of physicians who have themselves had attacks have written me in view of the more optimistic attitude I emphasized. Briefly, only one of my patients is dead—a woman 74 who died of a cerebral hemorrhage following an episode of violent anger. I have this week performed an autopsy in a case in which I am sure coronary thrombosis existed in 1896. The patient died at 70 of acute occlusion of the left descending artery after leading a relatively active life as a draftsman. I think thirty-nine years is, after all, quite a long time to live after a thrombosis.

DR B E GOODRICH, Detroit  
In reference to Dr Cooksey's question about temperature range, even the most severe cases of occlusion may show a moderate temperature range. A patient now in the hospital has a temperature range between 101 and 102. The total leukocyte count is 4,000 but the nonfilament count is ranging between 45 and 50 per cent. The patient has not gone into any appreciable heart failure, and gallop rhythm is not present, but I believe that he has an extensive myocardial infarction. I feel that this is one procedure which may be added to the ordinary blood count and increase our information. As far as its application is concerned, it primarily applies to the acute cases. It does not help indicate whether the patient will come back in six months with congestive heart failure or be seen five years later in comparatively good health.

### Lymphocyte Types and Their Clinical Significance

DR RAPHAEL ISAACS, Ann Arbor, Mich.  
At least six types of "lymphocytes" are recognizable in the peripheral blood of normal individuals. At present it is believed that these represent stages in the development of the adult form. Data, however, show that cells derived from lymph nodes are quite different from those derived from the spleen and that each type of cell can be differentiated morphologically, enabling one to list lymphocytes and splenocytes separately in the differential leukocyte count. On this basis, two separate types of lymphatic leukemia can be differentiated, with a different prognosis and response to treatment. The preponderance of one type over the other may be linked with definite clinical phenomena.

### DISCUSSION

DR C A DOAN, Columbus, Ohio  
I should like to ask Dr Isaacs two questions. First, were any studies of cell respiration performed to differentiate physiologically the two types of lymphocytes he has described as emanating from spleen and lymph nodes respectively and as being associated with leukemic states of varying severity? In our laboratory Dr Wiseman has differentiated lymphocytes on morphologic grounds using, however, somewhat different criteria than those presented by Dr Isaacs. It has been possible, furthermore, to separate the pathologic states involving these different lymphocytic types on the basis of cell respiration studies (Warburg), the leukosarcoma cells giving a malignant type of cell metabolism, the cells of chronic lymphatic leukemia yielding a normal metabolism. The clinical course in the former is rapidly fatal, in the latter it may be quite chronic. The second question is whether Dr Isaacs believes that in a fixed film preparation, however carefully made, it is possible to depend on a difference in cell size as the basis for differentiation of lymphatic elements. In my experience the size of individual cells varies so greatly in fixed films owing to the incidental trauma of preparation, regardless of the amount of care taken that this point is not a sufficiently accurate criterion on which to differentiate round cells.

DR RAPHAEL ISAACS, Ann Arbor, Mich.  
The cell respiration in these cells has not been determined. The younger can be told from the older type if one stains with brilliant cresyl blue, since the younger cells will stain a more brilliant blue. It is difficult even with accurate measurement to differentiate the shape and size of every cell. In a count of 100 cells one may not be able to classify 100, but one can classify enough to show the trend.

### The Blood Picture in Metastatic Carcinoma of Bones

DR FRANK J HECK, Rochester, Minn.  
It has been recognized for years that, in patients with metastatic carcinoma of bones, immature myeloid cells could appear in the blood stream apparently as the result of bone marrow irritation. This study has been carried out in a series of cases to determine the variations in the blood picture. In some instances in which relatively slight demonstrable bone changes existed the morphologic picture was indistinguishable from early chronic myelogenous leukemia, whereas in other cases in which the bone lesions were advanced, few if any changes were noted in the morphology of leukocytes.

### Morphologic Changes in the Blood in Hodgkin's Disease

GRACE M ROTH, B.S., and DR C H WATKINS, Rochester, Minn.  
Forty patients who had lymphoblastoma of Hodgkin's type and ten patients who had lymphosarcoma were studied for morphologic changes in the peripheral blood. The diagnosis

was made and confirmed in each case by surgical biopsy of the affected lymph node. Estimation of the number of leukocytes, the differential count and the morphologic examination were made in each instance. None of the individuals studied had received previous treatment for the disease. Results of examinations of blood were classified according to the duration of the disease and the extensiveness of the process. A slight increase in the percentage of neutrophils and a slight decrease in the percentage of lymphocytes were noted. The percentage of monocytes reached the upper limit of normal but in no instance was it above normal, a tendency for the monocytes to be shifted to the right was constantly present. The megakaryocytes could not be found on the slides. The suggestion that there is a blood picture characteristic of Hodgkin's disease could not be confirmed.

## DISCUSSION

DR C H WATKINS, Rochester, Minn. It should be emphasized that none of these patients had any form of treatment prior to the studies reported. Frequently after exposure to roentgen rays there is monocytosis with a greater tendency toward a shift to the right and some variation also in the general leukocyte picture. It is true that a blood picture which shows toxic neutrophils with a shift to the right of the monocytes is perhaps suggestive of Hodgkin's disease, but since this type of blood picture in rarer instances may occur in other toxic conditions, we feel that we are not justified in describing a blood picture as characteristic of Hodgkin's disease.

DR W S MIDDLETON, Madison, Wis. The report of Miss Roth and Dr Watkins interested me, as I worked with Dr Bunting for many years. Very early in Hodgkin's disease a lymphocyte increase will predominate over every other blood element, and therefore there occurs a progressive increase of the polymorphonuclear neutrophils so that at the terminal stage they will amount to 90 per cent or more of the total leukocytes. I recall a patient who was brought into the clinic in whom there were 38,000 white cells of which 98.5 per cent were polymorphonuclear neutrophils, with 0.5 per cent lymphocytes and 1 per cent monocytes. I believe that, given only the smears in lymph node diseases, Dr Bunting's batting average in making the diagnosis has been over 90 per cent without any other knowledge of the clinical condition. From my own standpoint I believe his real contribution is not so much from a diagnostic as from a prognostic standpoint. Given a case of Hodgkin's disease with a predominance of polymorphonuclear neutrophils, the prognosis is bad. That patient is going down hill rapidly. Following his personal work on megakaryocytes Dr Medlar asked that blood smears from all sorts of disease be submitted in the thought that he could make the diagnosis from these alone. I understand that he has no such presumption at the present time.

## Cinchophen—Is There a Safe Method of Administration?

DRS WALTER LINCOLN PALMER and PAUL S WOODALL, Chicago. A complete review of the published cases of cinchophen poisoning, undertaken in order to ascertain whether or not cautious and careful administration of cinchophen may be considered a 'safe' procedure, showed that small doses given for very brief periods may prove fatal discontinuance of the drug on the appearance of even the slightest symptoms does not ensure a favorable outcome. The first symptom usually recognized is jaundice and withdrawal of the drug at this stage even with appropriate therapy does not prevent a fatal termination in approximately half of the cases. Hence it is concluded that a "safe" method for the administration of cinchophen does not exist.

## DISCUSSION

DR DON SUTTON, Chicago. Since reporting years ago on early deaths from cinchophen I have been extremely interested and have reported six cases following various doses. In two the liver decreased definitely in size. I think it is justifiable to conclude that a moderate degree of atrophy existed in these cases. One case is worth while in the light of the statement that there is no safe way of administering it. A man aged 70 had a traumatic ulnar neuritis following injury. He was heavily addicted to alcohol. He had extreme pain and some two or three years ago he was advised to take a patent medicine which gave him complete relief from the pain. Five days later

he had an urticaria and when seen was jaundiced. Some time after, because of the great relief obtained from the cinchophen, he requested that it be given under supervision. Very cautiously for three days he was given 1 grain (0.065 Gm) of cinchophen daily. There were no effects. In three days the dose was increased, and again in another three days, until he was getting a total of 7 grains (0.46 Gm). At the end of that time there was definite itching and jaundice. He had a large liver which increased in size, and it looked for several days as though a fatal termination was in prospect. He recovered. This seems to represent an extreme case in which recovery occurred.

DR W E POST, Chicago. I had one case of intoxication from cinchophen but was fortunate enough to have a recovery. There has arisen in my mind the last two years the question as to whether this could be the same thing that was given when the drug was first used. Frederick Müller was here about 1927 and gave a discussion on gout. He advocated the administration of cinchophen two weeks of every month over a long period and he had had no ill effects. Why is it that he had that experience and so many of us have the experience that Dr Palmer presented? I wonder whether Dr Palmer could help me out with that query. Is the drug different?

DR W B COOKSEY, Detroit. Four months ago I was called to see a patient who gave a history of an attack of pain which I interpreted as gallbladder colic. She had been seen by another physician and shortly thereafter developed jaundice and was not getting better, so they changed doctors. I thought, because she had a tender liver which was swollen and because she was jaundiced, that she undoubtedly had gallbladder colic due to cholelithiasis. I sent her into the hospital, where a Graham dye test revealed absolutely nothing abnormal. Her icteric index began to decrease after a few days on the usual treatment, and I finally sent her home. Two weeks later I was calling on her when behind a picture on the dresser, I happened to see a nearly empty bottle of cinchophen. It was news to me that cinchophen intoxication could produce colicky pain. I looked it up, however, and found that not a few cases present upper abdominal pain at the onset.

DR K K CHEN, Indianapolis. Several years ago my associates and I carried out experiments in dogs with cinchophen. We gave both small and moderate doses, that is a fraction of the minimal lethal dose. After several weeks we noticed that several dogs were beginning to die. At autopsy we always found a picture similar to acute yellow atrophy. The surviving dogs were all jaundiced in the conjunctiva. When we killed these dogs the hepatic lesions were much the same as in those that died. Then we carried out other experiments, using half the dose we had given to the previous series, administered daily by mouth. While they were doing quite well, as judged by their behavior, activity and weight, we waited for several months and then killed the animals, thinking they had probably recovered or did not develop any pathologic lesions. When we made sections of the liver we uniformly found certain changes in the parenchymatous tissue. Our results were not published. At that time I was beginning to feel that from a pharmacologic point of view cinchophen should be considered a very dangerous drug. It was thought, however, that in human beings the therapeutic dose is much smaller than the dose we were using in animals per kilogram of body weight. I am glad that Drs Palmer and Woodall have emphasized the toxicity of cinchophen in clinical use which certainly bears out the results obtained from our animal experiments. I think that a better drug in the treatment of such a disease as arthritis should be looked for.

DR PHILIP S HENCH, Rochester, Minn. The authors' indictment of cinchophen is impressive and one which those of us who would continue its use must be able to answer. I agree that all products containing cinchophen should be so labeled a requirement to be made necessary by law. I agree that it is best to avoid the administration of cinchophen whenever an equally effective substitute is available. Thus I would not prescribe it simply for its analgesic effect. Other analgesics are at hand. There is one group of cases in which my associates and I feel that the continued use of cinchophen is justified for other purposes than analgesia. I refer to cases of gouty arthritis, of which there are many more than most physicians realize. At the clinic we see about 100 such cases each year. In the

majority of these cases there is no effective substitute for cinchophen. Colchicine is of value only during the first few days of an attack of acute gouty arthritis. The use of cinchophen and a diet in cases of gout is somewhat analogous to the use of insulin and a diet in diabetes. As the majority of diabetic patients find it difficult to avoid disaster by diet alone, without insulin, so very few patients with established gout can long remain free of distressing symptoms as a result of diet alone, even though they are very careful to follow instructions. Salicylates are not the pharmacologic equivalent of cinchophen in gout. It has been shown that the administration of at least 100 grains (6.5 Gm) of sodium salicylate daily is necessary to increase the concentration of urinary urates materially. Even so there is evidence that the increased excretion of urates after the administration of salicylates is partly the result of a diminished uricolytic and partly the result of an actual increase in the formation of urates and that it is not caused by the adventitious excretion of urates formed in the manner and concentration apparent prior to administration of salicylates. Some have reported that, instead of preventing gouty arthritis, the administration of salicylates has actually provoked an attack. The authors have spoken dramatically of "the march of death," which is presumably initiated by the first single dose of cinchophen. One must realize that, in every case of established gout, a potential march to death has begun with the very onset of gout even before any cinchophen has been administered. According to insurance statistics, the life expectancy of the patient with uncontrolled gout is reduced at least five years. Renal stones or a gouty nephritis often may develop and slowly prove fatal, cardiovascular disease also may develop, and the patient may die of a stroke or from coronary disease. To slow up or counteract this march of discomfort if not of death, which impends to every patient with gout, I feel justified in continuing the use of cinchophen. It will help the great majority of such patients, even though the drug may be deleterious or even fatal to a very occasional patient. Discussing the situation frankly with each patient as I do, I find that, to the average patient with gout, the symptomatic discomforts and the pathologic dangers of this disease, when uncontrolled, are much more real more present and personal (and statistically they are much more important), than the rather remote chance of a fatal cinchophen intoxication. The possibility of the latter has conservatively been estimated by some as being about 1,600,000 among those who use the drug. Even so, our mortality in cases of cinchophen jaundice at the clinic is not nearly as high as that reported by the authors. I do not believe that they are justified in ascribing to cinchophen some of the deaths they have mentioned, particularly those which occurred in cases of atrophy of the liver, months or even years after administration of the drug had been discontinued. They have not taken into account the occasional but definite spontaneous appearance of acute yellow atrophy of undetermined origin that may develop without the administration of drugs. With the cooperation of their family physicians throughout the country, we are following the course of several hundred patients with gout who have been seen by us at the clinic. The great majority are taking cinchophen (with sugar fluid and alkalis) intermittently, generally on two or three days each week. I know of none who have had jaundice fatal or otherwise. A few have had urticaria and dyspepsia. These have been told to discontinue the drug. I have repeatedly reviewed the world literature on the toxicity of cinchophen. It is my recollection that in very few of the cases have the patients had gout. In the majority of cases cinchophen poisoning has occurred in cases of chronic infectious (atrophic) arthritis. Although many of the latter patients take cinchophen, patients with gout take it much more persistently and in greater amounts. Two of our patients at the clinic, who had chronic infectious arthritis, have been taking about 90 grains (6 Gm) of cinchophen almost daily for about fifteen years, not on our prescription but under our occasional observation. They have shown no signs of cinchophen toxicity or hepatic disease. Dr. Snell has just reminded me of another patient, a physician, who has taken from 60 to 90 grains (4 to 6 Gm) of cinchophen daily since its introduction about 1908. He literally eats it, yet an intensive investigation of the function of his liver has not shown any evidence of intoxication. As a result of the dramatic and repeated warn-

ings of many earnest and scientific physicians, some of them perhaps overzealous prophets of doom, we are now afraid not only of cinchophen but of aminopyrine. We are warned about barbiturates and even are told of occasional deaths from acetylsalicylic acid. As physicians, we are being hard pressed to find analgesics prescribable with complacency. From our experience with cinchophen, we have decided at the clinic to continue to approve its careful intermittent use in cases of gout (but in no other disease) not just during the attacks of gouty arthritis but in the intervals thereafter, in order to prevent the next attack and above all to ward off if possible the much more important insidious and potentially fatal lesions in the cardiovascular renal system.

DR RUDOLF SCHINDLER, Chicago. I do not know whether atophan and cinchophen are the same drug. We observed, however, also in Munich cases of poisoning after the use of atophan.

DR F. JANNEY SMITH, Detroit. I have a relative who has taken cinchophen almost daily for ten years, having a severely painful chronic arthritis. Nothing else will touch or relieve this woman's pain. If she does not take it she is crippled, and it is quite necessary for her to be able to do something. The question put up to me is whether she should continue to take this drug since more reports have been brought out about its toxicity. I noticed in the report of Drs. Palmer and Woodall that very many of the cases of liver intoxication occurred after rather brief administration of the drug. Can it not be that there are certain individuals who are very sensitive to it, and others who are very resistant, such as the patient I speak of? If this patient has taken the drug safely for ten years without trouble, would it not be better to permit her to continue to take cinchophen and obtain symptomatic relief, accepting the relatively slight risk of liver damage which is probably present in her case?

DR WALTER L. PALMER, Chicago. With regard to Dr. Post's question, I think we can bear in mind that liver poisoning from cinchophen was described first in 1923. Two cases were reported in 1925, one in England and one in this country. It might have taken two or three years for Frederick Müller in Germany to become acquainted with the toxic action of the drug. Cinchophen poisoning occurs all over the world, reports are found in the German, French and South American literature. In regard to Dr. Cooksey's case, there are a good many instances in the literature of severe upper abdominal pain, such as he described. I am interested in the experimental work that was reported. I was glad to have Dr. Hench defend the use of the drug in gout. He has had more experience than I. If there is any other drug that will do the work in gout, it should be used. I feel that cinchophen should be labeled as poison. Now, of course, the great majority of patients can take cinchophen and take it for years without trouble, just as Dr. Hench and others have pointed out. There is only a very small percentage of cases in which the drug is toxic, but the point I wish to bring out is that this small percentage is a very definite percentage, and that for about half of them the outcome is death. It should not be used unless the indication is absolute. Dr. Hench has criticized some of these cases. I think the criticism is very well taken. We cannot set ourselves up as the final judges of the reports in the literature. I was particularly skeptical of two or three I showed and said to myself "shall I include these?" In the fatal ones, however, the lesion at autopsy was described characteristically as liver necrosis and on microscopic examination the typical destruction of the liver cells seen in cinchophen poisoning was found. There are other poisons, such as chloroform, which will do the same thing to the liver, but cinchophen in our experience and in the reports found in the literature is the most common agent. In regard to Dr. Smith's case, if the patient has taken cinchophen and obtains relief, she might continue, although there is a definite risk. This risk, however, is certainly not great when the patient has proved a tolerance to cinchophen over a period of years. It must be recalled that one patient in the series had taken cinchophen in large doses for three years and then suddenly developed acute yellow atrophy. If cinchophen is to be used, there is only one indication, gout or extremely severe arthritis, and then it should be recognized that the drug is dangerous.

(To be continued)



## Current Medical Literature

### AMERICAN

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Titles marked with an asterisk (\*) are abstracted below.

#### American J Digestive Diseases and Nutrition, Chicago

2 511 592 (Nov) 1935

- Callstooses A J Delario Paterson N J—p 511  
Abdominal Pain as Misleading Symptom of Spinal Cord Lesions E D Kiefer Boston—p 520  
Autoregulation of Gastric Secretion J J Day and D R Webster, Montreal—p 527  
Influence on Carbohydrate Metabolism of Experimentally Induced Hepatic Changes IV Block of Reticulo-Endothelial System with Especial Reference to Kupffer Cell T L Althausen and B E Blomquist, with technical assistance of E F Whedon San Francisco—p 532  
Studies on Crystalline Vitamin B<sub>1</sub> Observations in Diabetes M G Vorhaus R R Williams and R E Waterman New York—p 541  
Castro-Intestinal Manifestations of Hyperinsulinism S Harris Birmingham Ala—p 557  
Treatment of Amebiasis with Iodoxyquinoline Sulfonic Acid F W O'Connor and C R Hulse New York—p 568  
Specificity of the Frei Test in Lymphopathia Venerea H E Bacon Philadelphia—p 570

**Treatment of Amebiasis with Iodoxyquinoline Sulfonic Acid**—During the last six years O'Connor and Hulse treated 152 cases of *Endamoeba histolytica* infection with iodoxyquinoline sulfonic acid. There seems reason to believe that it is a useful drug in intestinal amebiasis. It is now shown to be as effective in stopping severe symptoms rapidly and curing acute cases as it is in curing carrier cases. It will not cure all cases any more than any other drug known for the treatment of this infection. No toxic symptoms have been observed during or following its administration. In some cases the full dosage (four pills three times a day) increases the diarrhea and causes a scalding sensation during defecation. These symptoms may be eliminated by reducing the dosage without discontinuing the treatment. The drug alone is useless in the treatment of hepatic amebiasis. When liver abscess is diagnosed present experience suggests that treatment with emetine hydrochloride hypodermically promptly carried out with the necessary precautions may stop further abscess extension. In such cases the administration of a full course (ninety six pills) of iodoxyquinoline sulfonic acid at the same time seems warranted to prevent later reinfection of the liver from the intestine.

#### American Journal of Medical Sciences, Philadelphia

100 727-866 (Dec) 1935

- Urine Formation in Amphibian Kidney A N Richards and A M Walker Philadelphia—p 727  
Urine Concentration in Diabetes Insipidus Comparison of Effects of Several Drugs E L DeGowio Iowa City—p 747  
Nature of Osteogenesis Imperfecta I D Puppel I E Barron and C M Curtis Columbus Ohio—p 756  
Serum Phosphatase in Osteogenesis Imperfecta O N Smith and J M Mitchell Philadelphia—p 765  
Elevated Blood Urea of Acute Gastro-Intestinal Hemorrhage and Its Significance A P Ingrosso Brooklyn—p 770  
Effect of Anticoagulants on Sedimentation Rate Esther M Kreisheimer Agnes Hodapp and Edith Goldsworthy Minneapolis—p 775  
Tiger Snake Venom in Treatment of Accessible Hemorrhage S Rosenfeld and S E Lenke Brooklyn—p 779  
"Tight" (Nonregurgitant) Mitral Stenosis Clinicopathologic Study I W Held A Goldbloom and A Lieberman New York—p 791  
Active versus Conservative Management of Planned Deliveries J C Hirst Philadelphia—p 806  
Observations on Etiology of Toxemias of Pregnancy Relationship of Nutritional Deficiency Hypoproteinemia and Elevated Venous Pressure to Water Retention in Pregnancy M B Strauss Boston—p 811  
Erythema Annulare Rheumaticum A F Abt Chicago—p 824  
Subcutaneous Fatty Nodules in Sacro-Iliac Area C J Sutro New York—p 833

**Nature of Osteogenesis Imperfecta**—Puppel and his co-workers present the results of an extensive investigation of a typical case of osteogenesis imperfecta in a youth aged 17

years. Their study reveals no evidence of hyperparathyroidism. The serum calcium and phosphorus are normal. The urinary excretion of calcium is normal. The patient is in a continuous but normal negative calcium balance. The plasma chloride averaged 310 mg per hundred cubic centimeters. The daily urinary excretion of chloride averaged 3.9 Gm. This is within normal range for the low chloride intake. The blood iodine averaged 89 micrograms per hundred cubic centimeters, which is greatly increased. The daily urinary elimination of iodine averaged 101 micrograms. This indicates an increase in thyroid activity. It is suggested that this disease is due to a congenital hypoplasia of the mesenchyma, perhaps associated with a deficiency in bone phosphatase production.

**Serum Phosphatase in Osteogenesis Imperfecta**—Smith and Mitchell observed a severe case of osteogenesis imperfecta from birth until death eleven weeks later, which afforded the opportunity of considering the serum phosphatase increase sporadically reported in this disease. The origin, distribution and excretion of phosphatase and its role in normal individuals is reviewed briefly. In the cases of osteogenesis imperfecta reported with serum phosphatase studies, an increase averaging about twice normal occurs in less than 30 per cent, chiefly in patients between the ages of 5 and 7 years. In the remaining 70 per cent the serum phosphatase was within normal limits. This elevation is more of academic interest than of clinical value at this time, as its mechanism is not yet understood. In the present case of osteogenesis imperfecta the serum phosphatase in one determination was 17 times the average normal level.

**Tiger-Snake Venom in Treatment of Hemorrhage**—Rosenfeld and Lenke used tiger-snake venom beneficially in checking uncontrollable local bleeding in eight patients suffering from hemorrhagic tendencies, of which three cases were thrombocytopenia, two hemophilia, one of each multiple hereditary telangiectases, prolonged jaundice and angio-asthenia with bleeding due to local action of hirudin from leech bites. There were only two occasions when doubt arose as to the efficacy of the venom. On one occasion the failure seems to have been due to a thick coating of precipitated ferric chloride and tannic acid, which interfered with the action of the venom. When this incrustation was removed and venom was applied to the raw bleeding surface, hemorrhage ceased within three minutes. On another occasion after the application of venom, a lacerated fragment of gum continued to bleed when the rest of the wound was dry. The ordinary interdental packing was serving only further to lacerate this fragment and to increase the hemorrhage from the site. The application of a venom pledget by digital tamponade to the exact point of bleeding promptly stopped the flow. Rhythmic recurrence of the bleeding tendency was observed in the hemophilic patients. Venom does not seem to prevent recurrences of bleeding from the treated area after an interval of hours or days. Perhaps the renewed flow is due to actual trauma such as chewing or to the cryptic factors that influence the hemorrhage in hemophilia, or to the washing away or destruction of venom. To minimize the possibility of recurrent hemorrhage, pressure should be maintained over the site of bleeding for several hours after hemostasis has been attained. For dental hemorrhage a Barton bandage has usually been applied overnight. Neurologic examination of these patients disclosed no evidence that the neurotoxin of the venom was doing any damage. Even in patients who received large amounts (from 15 to 30 cc of 1:5000 solution) orally or intranasally no impairment of the cranial nerves and no muscular weakness were noted. Locally no swelling, ulceration, necrosis or infection was observed. The wounds healed normally. Tiger-snake venom is to be employed only by topical application and is not to be injected.

**Erythema Annulare Rheumaticum**—Abt noted the distinctive rash of erythema annulare rheumaticum in six of a group of children with rheumatic endocarditis. The rash is a specific exanthem associated only with rheumatic endocarditis. The lesions are pale red or bluish red semicircles or rings which on first appearance may be from 2 to 4 mm in diameter and which may develop into rings of from 1 to 3 cm in diameter. The lesions are found on the chest over the abdomen on the sides of the thorax and on the back. They are rarely seen on the extremities and never on the face or mucous mem-

branes. The lesions are never papular but always macular. There is no itching, edema or hemorrhage associated with them. They disappear without scaling or pigmentation. Erythema annulare rheumaticum so constantly indicates the persistence of a rheumatic infection in association with a cardiac involvement that rheumatic endocarditis may be diagnosed by merely seeing this rash on the skin. Its prognostic value, in the author's experience, is varied. In the one fatal case here reported it was an ominous sign. In the other five children the rash has been noted after illnesses varying from slight colds without febrile reaction to recurrent attacks of rheumatism with fever. In the group of children under his observation at the Spaulding School he has noted this rash more frequently than he has been able to demonstrate subcutaneous nodules. The exact nature of the rash is as yet unknown. No one has as yet established a relationship between this rash and the tuberculin reaction or the demonstration of tubercle bacilli by gastric lavage, as has been done in erythema nodosum. The occurrence of this rash in children suffering with rheumatic endocarditis, as is the case with other cutaneous lesions found in this disease, may be considered evidence of either the persistence of an active rheumatic endocarditis or a sign of reactivation of the disease.

### Am J Roentgenol & Rad Therapy, Springfield, Ill

34: 573 716 (Nov) 1935

- Congenital Absence of Septum Pellucidum. Its Diagnosis by Encephalography. C G Dyke and L M Davidoff. New York—p 573.
- Serial Bronchography in Diagnosis of Suppurative Pulmonary Processes. P L Fariñas. Havana, Cuba—p 579.
- \*Oblique Films for Study of Adhesions in Artificial Pneumothorax. R T Ellison. Philadelphia—p 592.
- \*Kidney Function in Acute Calculous Obstruction of Ureter. Some Observations of Kidney and Ureter Function in Acute Calculous Obstruction of Ureter Based on Excretory Urography. L F Wilcox. Detroit—p 596.
- Roentgenologic Diagnosis of Appendical Abscess. M Ostro and H L Granoff. Baltimore—p 606.
- Duodenal Diverticulosis. J D Lawson. Sacramento, Calif—p 610.
- Multiple Osteochondropathy of Phalanges of Fingers. S A Reinberg and W P Graziansky. Leningrad, U S S R—p 617.
- Further Discussion of Saturation Method of Roentgen Therapy in Deep Seated Malignant Disease. G E Pfahler. Philadelphia—p 629.
- Radium Emanation Treatment of Vernal Catarrh. E P Pendergrass and J R Andrews. Philadelphia—p 637.
- Diagnosis and Treatment of Malignant Tumors of Nasal Sinuses. G A Robinson. New York—p 641.
- \*Further Observations on Use of Unfiltered Roentgen Rays for Superficial Cancers of Wide and Deep Involvement. B P Widmann. Philadelphia—p 644.
- Three Hundred Kilovolts Treatment Machine. Preliminary Report. J T Murphy. Toledo, Ohio—p 653.
- Roentgen Therapy with Seven Hundred Kilovolts. R E Herendeen. New York—p 659.
- Problem of Uniform Distribution of Radiation Field in Super High Voltage Roentgen Therapy with Tubes Operating on Continuous Pump. T Leucutia and K E Corrigan. Detroit—p 664.
- Factors Influencing Quantitative Measurement of Roentgen Ray Absorption of Tooth Slabs. III. Mechanical Factors of Tube and Machine. H C Hodge, G Van Huysen and S L Warren. Rochester, N Y—p 678.

**Study of Adhesions in Artificial Pneumothorax.**—Ellison asserts that the usual postero anterior roentgenogram of the chest shows only a profile view of the collapsed lung and that there are important areas of pneumothorax lying between the lung and the anterior wall of the chest, and the lung and the posterior wall of the chest, that are not visualized in this projection. At times technically important adhesions lie in these areas. Even stereoscopic films are of but little value in this connection because adhesions which are parallel to the main beam of the roentgen ray are not visualized or usually they are lost in the shadows cast by the collapsed lung. Any technic of roentgen examination that will visualize these areas will be a great aid in the selection of patients for intrapleural pneumolysis and in the operative attack on such adhesions. It was in an effort to better this situation that the author began using oblique exposures of the hemithorax in which the pneumothorax existed. It was found, by using a lead screen covering half a casset, 14 by 17 inches, the long way and changing it between exposures, that the two oblique views could be taken on one film and that this in association with one postero-anterior exposure, gave more information than a stereoscopic pair. The angle of rotation used was about 45 degrees from the plane of the film. Further rotation in the anterior oblique position will throw the shadow of the sternum into the pneumo-

thorax space and confuse the picture, while in the posterior oblique the shadow of the spinal column will overlie the pneumothorax. In placing the patient before the casset to take the posterior oblique exposure, the forearm on the pneumothorax side should be placed across the small of the back, as this position throws the humerus out of the picture. In taking the anterior oblique exposure, the arm on the side to be filmed should be rotated inward and the point of the shoulder brought as far forward as possible. The tube, of course, should be centered over the middle of the unprotected half of the film for each exposure. It was also found satisfactory to use the same exposure technic as for the postero anterior position, except that the time was doubled.

**Kidney Function in Obstruction of Ureter.**—Wilcox believes that there are several factors besides disease which may influence kidney and ureteral function and these are (1) the use of diagnostic instruments, such as the cystoscope and ureteral catheter, just prior to the intravenous urographic study and (2) the injection of drugs into the body tissues hypodermically or intravenously. The roentgenologist must be aware of these facts, which means that he must have an accurate clinical history and be in close contact with the patient during the study. In acute calculous obstruction of the ureter, certain characteristic observations are evident in excretory urography. If excretory urography is performed during the period of an acute calculous obstruction of the ureter, there is none of the opaque medium in the kidney calices, pelvis or ureter on the affected side, and the kidney shadow on that side is greatly increased in density. If the obstruction is removed there is immediate filling of the kidney calices and pelvis with the opaque medium, and the density of the kidney shadow decreases. Experimental studies on the rabbit by means of excretory urography, after blocking of the ureter for sixty minutes, reveal the same changes. The nonappearance of the opaque medium in the kidney calices has been ascribed to a reflex inhibition of urine. The author believes that experimental study would indicate that urine formation in the kidney continues to a degree and that the increased pressure in the drainage system from that kidney prevents in a mechanical manner the escape of the opaque medium from the uriferous tubules into the calices. He offers this explanation as being the chief if not the entire reason for the nonappearance of the opaque medium in the kidney calices. He also suggests that the term "repression of urine" would be more strictly correct than "suppression of urine," as it indicates that the formation of urine by the kidney units does not cease.

**Unfiltered Roentgen Rays for Superficial Cancers of Wide and Deep Involvement.**—During the last five years Widmann has extended the use of unfiltered x rays to the treatment of inoperable, ulcerated, primary and recurrent tumors of the breast, vulva, rectum, abdominal incisions and ulcerated glandular metastases in addition to the advanced basal cell type of carcinoma. These lesions are all larger than 5 cm in diameter, averaging about 10 cm. Palliation and materially reducing the size of an unsightly process were the primary objectives. Bleeding from soft fungations and foul sloughs partially or completely subsided, concomitant with marked reductions in the size of the lesions. Regressions are usually phenomenally rapid, and the resulting wounds are relatively clean and compare favorably with an electrosurgical excision. The surface ulceration diminishes, probably owing to healing with ensuing tissue contracture, the result of an extensive fibrosis. Lesions from 5 to 6 cm in diameter may show complete surface healing a few of these cases being symptom free from four to five years. The limitations of dosage are proportionate to the thickness of the lesion. A slow rate of irradiation on the basis of small doses once a week has been found to be desirable and effective. An average period of from three to four weeks has afforded an opportunity to temporize a predetermined plan of treatment according to the response. This is a safeguard against excessive dosage, particularly with unusually sensitive lesions and inaccuracies in measuring the size of the growths. Long and short wavelength radiations should be combined for selected cases, particularly when experience justifies a reasonable outlook for a possible clinical cure.

## American Review of Tuberculosis, New York

32 481 616 (Nov.) 1935

- Undergraduate Teaching of Tuberculosis J A Miller New York —p 481
- Involvement of Myocardium in Tuberculosis Review of Literature and Report of Three Cases H Horn and O Saphir Chicago —p 492
- Juvenile Diabetes and Tuberculosis A L Newcomb Chicago —p 507
- Artificial Pneumothorax in Treatment of Lobar Pneumonia T Klein and V L Tuck Philadelphia —p 511
- Intrapleural Pressure in Artificial Pneumothorax Statistical Study of Range of Intrapleural Tension in Six Hundred and One Tuberculosis Patients E Bunta Chicago —p 520
- Destructive Phases of Induced Phrenic Paralysis in Pulmonary Tuberculosis with Cavity P Slavin Glen Gardner A J —p 535
- An Improved Forceps for Operations on Phrenic Nerve J W Cutler, Philadelphia —p 543
- Changes in Pathology of Pulmonary Tuberculosis as a Result of Treatment H C Sweany Chicago —p 544
- \*Immunization of Tubercle Bacilli from Blood of Tuberculous Persons M Siegel and Bella Singer New York —p 563
- Tuberculous Bacillemin Experimental Studies with Three Pathogenic Types of Tubercle Bacilli H J Corper and C B Vidal Denver —p 575
- Origin of Pulmonary Tubercles in Intrapulmonary Lymphoid Tissue J Zeyland Poznan Poland —p 588
- Immunization of Guinea Pigs with Heat Killed and Formal Killed Tubercle Bacilli A Branch and J F Enders Boston —p 595
- Effects of Adding Various Substances to Suspensions of Tubercle Bacilli in Experimental Infection C B Vidal Denver —p 601
- Report of Eleven Hundred and Seventy Cutaneous Tests with Four Tuberculin C R Houston Los Angeles —p 604
- Whooping Cough in Tuberculous Children J I Hershey and Frieda Ward Eagleview Pa —p 612

**Phrenic Paralysis in Pulmonary Tuberculosis with Cavity**—Slavin discusses the four groups of cavernous cases in which phrenic procedures lead to exacerbation of destructive processes excavated exudative and large fibrocaceous lesions, large subpleural cavities, and cavities in advanced fibroid tuberculosis. Seven cases are described in which intended artificial pneumothorax was replaced by phrenic paralysis because of failure to find a free pleural space. Though further enlargement of cavitation could be expected in those cases under treatment by rest alone, the sequence of events showed that paralysis of the diaphragm was responsible for additional damaging processes. Two of these cases with excavated exudative and large fibrocaceous lesions developed postoperative stagnation of sputum in the cavities and accelerated detachment of caseous tissue, resulting in a rapid spread of the cavitation and massive extension of disease. An air-filled portion of a cavity may become obscured after operation by retained sputum or by approximated adjacent infiltrated areas the roentgenogram simulating postoperative obliteration of the cavity. In large subpleural cavities phrenic paralysis causes impairment of drainage, leading to progressive destruction within the walls of the cavity. In cases with excavated advanced fibroid tuberculosis there may be a dangerous postoperative reduction of their depleted vital capacity. In all four groups high elevation of a paralyzed diaphragm does not seem to diminish the untoward effect of the operation.

**Tubercle Bacilli in Blood of Tuberculous Persons**—Siegel and Singer employed the Loewenstein method of culturing tubercle bacilli from the blood in 911 blood specimens from 422 tuberculous persons. There were six macroscopic positive cultures and fifty-five microscopic positive cultures. The macroscopic positive cultures were undoubted cultures of tubercle bacilli according to subculture and virulence tests. The microscopic positive cultures were not proved definitely to be cultures of tubercle bacilli since subcultures and animal inoculations gave negative results. The primary macroscopic growths of tubercle bacilli from the blood of living tuberculous persons were scanty usually only one or two colonies appearing from a sample of from 5 to 10 cc of blood. The six macroscopic positive cultures were obtained from two infants with miliary tuberculosis an adult critically ill with pulmonary and intestinal tuberculosis an adult immediately after a first stage thoracoplasty operation the umbilical blood of a tuberculous placenta and the postmortem heart's blood of a newborn infant who died three hours after birth with no evidence of tuberculous lesions. Hemoglobin did not seem to inhibit the growth of tubercle bacilli according to a comparative study of the Loewenstein method and the whole blood method. In this series of ninety-eight specimens from sixty three tuber-

culous persons, there were three macroscopic positive cultures by the direct culture of whole citrated blood as compared with two macroscopic positive cultures and one microscopic positive culture by the use of Loewenstein's method.

**Immunization of Guinea-Pigs with Tubercle Bacilli**—In their experiments Branch and Enders endeavored to determine whether or not there was a quantitative difference in the immunity obtained after vaccination by the intravenous, the intramuscular and the intraperitoneal routes, to compare the value of vaccines consisting of tubercle bacilli killed by heat at 65 C and by the addition of formaldehyde, and to ascertain whether or not there appeared to be any correlation between the time of survival of an animal and the presence of the allergic state as denoted by a cutaneous response to the injection of tuberculin resulting from vaccination and existing previous to infection. The organisms used throughout were from month old egg cultures of the virulent human strain H37. In accordance with the results of earlier observations young cultures of virulent tubercle bacilli, killed by heat, have given satisfactory results as a prophylactic vaccine in guinea-pigs. The intramuscular route of administration of the vaccine proved more efficacious than the intravenous or intraperitoneal routes. Organisms killed by formaldehyde were no more effective than were heat-killed bacilli. It would seem advisable to continue to assay the protective value of vaccines of dead tubercle bacilli, killed by other methods than those described, in the hope of finding a still more efficacious dead vaccine since certain disputed points with regard to the use of avirulent living tubercle bacilli as a vaccine have hindered the universal employment of this method in either animals or man. No correlation was found between the degree of skin test reactivity of individual animals to tuberculin following vaccination before infection and their period of survival after infection (immunity).

## Archives of Internal Medicine, Chicago

58 1067 1300 (Dec.) 1935

- \*Appearance of Dengue-like Fever in Northern California G Cheney San Francisco —p 1067
- \*Hyperglycemia and Glycosuria Associated with Disease of Biliary Tract H Lande and H Pollack New York —p 1097
- Idiopathic Steatorrhea Metabolic Study of Patient with Reference to Utilization of Nitrogen and Fat J F Weir and Mildred Adams Rochester Minn —p 1109
- Tularemia Report of Three Fatal Cases with Autopsies A Bernstein Baltimore —p 1117
- Acute Subacute and Chronic Isolated Myocarditis Report of Case M A Simon and S Wolpan Cleveland —p 1136
- \*Cancer as Problem in Metabolism H H Beard New Orleans —p 1143
- Bacteriology of Normal and Diseased Gallbladders E Andrews and Lucy Dell Henry Chicago —p 1171
- Pathology of Vessels of Pulmonary Circulation Part I O Brenner Birmingham England —p 1189
- Effect of Theophylline Ethylenediamine on Experimentally Induced Cardiac Infarction in Dog W M Fowler II M Hurewitz and F M Smith Iowa City —p 1242
- \*Theophylline in Treatment of Disease of Coronary Arteries F M Smith Iowa City H W Rathe Waverly, Iowa and W D Paul Iowa City —p 1250
- Carbohydrate Intolerance and Intestinal Flora I Clinical Study Based on Sixty Cases T L Althausen J B Gunnison M S Marshall and S J Shipman San Francisco —p 1263
- Review of Neuropsychiatry S Cobb Boston —p 1287

**Dengue-like Fever in Northern California**—During the summer of 1934 Cheney observed in San Francisco six cases of high, usually biphasic fever averaging a week in duration and not accompanied by symptoms of involvement of the upper portion of the respiratory tract or leukocytosis. They appear to represent a disease entity new in northern California. The clinical changes in these six cases and in four other cases produced by inoculation with whole blood are practically identical with those of dengue. The incidence of complications was higher than is usual in dengue but their nature is the same. This may be explained on the ground that the local population is less resistant to this type of infection. However as dengue commonly makes its appearance in a new field in the form of a widespread epidemic and as the only known vector is the mosquito *Aedes aegypti* which has never been observed in California the disease in these cases cannot positively be diagnosed as dengue. Also it has not been shown that the infective agent in these cases was truly a filtrable virus and it has not been possible to show whether an immunity to dengue developed

after the attack. Under these circumstances it seems wise to classify this type of febrile disorder as "dengue-like," although all the clinical evidence points toward its being dengue. If this fever recurs next summer, its exact status may be determined accurately.

**Glycosuria Associated with Disease of Biliary Tract**—Lande and Pollack cite three cases in each of which there was a direct correlation between the disturbance of carbohydrate metabolism and the degree of impairment of hepatic function. Not only did the restoration of normal function of the liver by adequate biliary drainage result in the disappearance of the diabetic manifestations, but the ingestion of dextrose was followed by normal values for sugar tolerance. They explain the disturbance of carbohydrate metabolism in their three patients on the basis of a disturbance of the function of the liver as a blood sugar regulating mechanism. Studies on the respiratory quotient should be carried out to determine whether there is actual impairment of the ability of these patients to oxidize dextrose. The restoration of the normal value for dextrose tolerance is a criterion for differential diagnosis. Each of the patients was seen during his first attack of disease of the biliary tract. It is possible that repeated or prolonged attacks of disease of the biliary tract might produce permanent damage to the mechanisms regulating the blood sugar. It seems reasonable to the authors especially in the light of recent experimental evidence to assume that a disturbance of carbohydrate metabolism with complete restoration following biliary drainage as in their three cases may be interpreted on the basis of hepatic dysfunction.

**Cancer as Problem in Metabolism**—Beard reviews cancer as a problem in metabolism under the following headings: carbohydrate metabolism of tumors; lipid metabolism and cholesterol, irradiation and carcinoma of the skin and the carcinogenic hydrocarbons. Endocrine imbalance in the pathogenesis of some types of cancer is reviewed under estrogenic substance, prolactin, extracts of testicle, spleen, thymus and parathyroid, insulin, and extracts of adrenal cortex. He believes that the following concepts are worthy of consideration by students of the problem: 1. In malignant tumors the metabolism of carbohydrate is abnormal resulting in low respiration and high glycolysis. 2. Lipoids and cholesterol are definitely increased the latter especially in carcinoma of the skin. 3. Massive doses of ultraviolet radiation may produce cancerous lesions about the eyes, ears and head of the experimental animal. 4. Hydrocarbons containing the phenanthrene group and estrogenic substance are both carcinogenic and estrogenic. 5. The chemical relationship of the bile acids, sterols, sex hormones and carcinogenic hydrocarbons is established. 6. Injections of gonadotropic substance may inhibit the growth of some types of tumors. 7. Extracts of adrenal cortex, thymus and spleen and insulin may also have a retarding influence on some types of experimental tumors. The relation of sulfhydryl to the problem of cancer is discussed.

**Theophylline in Treatment of Disease of Coronary Arteries**—Smith and his associates believe that the preparations of theophylline are among the most effective remedies in the treatment of congestive failure due to disease of the coronary arteries. The action is prompt and generally evident in all cases in which it is possible to restore the cardiac function, provided the work of the heart is reduced to the minimum through absolute rest in bed, relaxation and sleep. Theophylline, generally in the form of theophylline ethylenediamine, 1½ grains (0.1 Gm.) after meals, is continued after the patient leaves the hospital. The results in 100 cases of paroxysmal dyspnea, angina on effort and occlusion of the coronary arteries in which treatment was administered outside the hospital are in general accord with what might be expected from the experimental study. Questionable results and failures are encountered but this is to be expected in the more advanced forms of the disease. Theophylline should be prescribed as soon as the diagnosis of disease of the coronary arteries is established and its administration should be continued for a long period in order to insure the maximal benefit from the medication. It should be remembered however that this constitutes only one measure in the treatment and except for experimental purposes should not be employed to the exclusion of other established means of restoring the cardiac function.

## Archives of Otolaryngology, Chicago

22 659 786 (Dec.) 1935

- Suppuration of Petrous Pyramid I. Friesner J. G. Druss, II. Rosenwasser and S. Rosen New York—p. 659
- Regeneration of Nasal Mucosa L. R. Boling St. Louis—p. 689
- Mixed Tumor of Retrotympanic Space Report of Case. A. H. Persky Philadelphia—p. 725
- Effect of Physical Agents on Temperature of Nasal Sinuses. H. K. Tebbutt Jr. Albany N. Y.—p. 733
- Chronic Tonsillitis in the Adult Clinical Bacteriologic and Pathologic Study T. N. Hunnicutt Jr. H. J. Sternstein and H. E. MacLellan, Boston—p. 744

## Archives of Surgery, Chicago

31 851 1042 (Dec.) 1935

- \*Palliative Irradiation of Gastric Cancer G. T. Pack, Isabel M. Scharnagel, Edith H. Quimby and Marion C. Loizeaux New York—p. 851
- Fractures of Base of Radius in Adults N. W. Cornell New York—p. 897
- \*Surgical and Anesthetic Risk in Cardiac Disease J. Hickman II, Livingstone and M. E. Davies Chicago—p. 917
- \*Surgical Treatment of Carcinoma of Head of Pancreas and of Ampulla of Vater E. S. Judd and M. T. Hoerner, Rochester Minn.—p. 937
- Urinary Calculi in Bone Diseases Review of Literature and Report of Cases A. E. Goldstein and B. S. Abeshouse Baltimore—p. 943
- Chronic Nonspecific Thyroiditis J. G. Lee New York—p. 982
- Review of Urologic Surgery A. J. Scholl Los Angeles E. S. Judd, Rochester Minn. J. Verbrugghe Antwerp Belgium A. B. Hepler Seattle R. C. Cutierrez, New York and A. J. O'Connor Chicago—p. 1013

**Palliative Irradiation of Gastric Cancer**—Pack and his associates employed radiation therapy in an attempt to afford palliation to sixty patients with advanced inoperable cancers of the stomach. The majority of lesions were situated in the proximal half of the stomach. With the exception of one case, these experiments have been conducted during the last three years. One patient with gastric lymphosarcoma is living and well six years after radiation treatment. Another patient is in good health three years following irradiation of a carcinoma of the stomach, and two others are without evidence of gastric cancer after an interval of two years. Palliative results are difficult to evaluate, but at least six patients have benefited greatly from these treatments only to succumb later to recurrent activity of residual cancer or to distant metastases. One middle-aged woman with a bulky carcinoma on the greater curvature of the fundus lived comfortably for twenty months and gained 45 pounds (20.4 Kg.) in weight; then generalized carcinomatosis developed, which caused her death three months later. A man of 40 with a carcinoma occluding the cardiac orifice was able to engage in manual labor for one and one-half years following radiation therapy; he subsequently died of repeated gastric hemorrhages. Radiation therapy, however administered, offers little hope for cure to the patient with gastric cancer. The justification for a trial of irradiation is the hope that the cancer may fall into the infrequent group of radiosensitive tumors which must constitute less than 10 per cent of all gastric cancers. The occasional palliation is more frequent than the apparent cures. Whatever advantages or benefits have occurred to any of these sixty patients are over and above what could have been given them by surgical measures, by the very definition of the term inoperable. Radiation therapy is not proposed as a substitute for surgical treatment of operable gastric cancer.

**Surgical Risk in Cardiac Disease**—Hickman and his collaborators made a study of the postoperative course in 336 patients with cardiac disease who came to the operating room during a period of two years. Since there were only six deaths due to cardiac disease and two deaths due to pulmonary disease related to the surgical intervention and anesthesia in the 336 patients who underwent 345 operations, the resulting mortality of 2 per cent indicates that as a group patients with cardiac disease are fairly good surgical risks. Angina pectoris, coronary occlusion, decompensation, hypertension and thyrotoxic heart disease are, in the order named, the most serious diseases with which one has to deal. Contrary to the belief of several authors, inhalation anesthesia, particularly ethylene-oxygen anesthesia, is safe when a high percentage of oxygen is used and asphyxia or struggling is avoided. Ethylene oxygen and local anesthesia gave the most

satisfactory results in the authors' cases. The use of spinal, ether or nitrous oxide-oxygen anesthesia increased the incidence of postoperative complications and deaths.

**Surgical Treatment of Carcinoma of Head of Pancreas.**—Judd and Hoerner performed a palliative operation in fourteen of twenty-one cases of carcinoma of the ampulla of Vater at the Mayo Clinic. Cholecystogastrostomy was performed twelve times and cholecystoduodenostomy and choledochoduodenostomy once each. Four of the patients did not recover from the operation but the average postoperative life of those who did was 139 months. In the seven remaining cases in this group the lesion appeared to be amenable to complete extirpation. Consequently, resection of the ampulla of Vater together with the tumor was carried out. Four of the five patients who survived the operation were completely relieved of their symptoms and lived for one year and three months, two years and two months, two years and two months and three years, respectively. One patient was not traced. For the sake of comparison, the authors selected 158 cases of carcinoma of the head of the pancreas, a condition closely related to malignant lesions of the ampulla of Vater. Some form of anastomosis between the biliary tract and the intestine was performed in these cases. In sixty-four cases the differentiation of carcinoma and chronic pancreatitis could not be made with certainty, although in the opinion of the surgeon a malignant condition was the more likely in the majority of cases. The mortality at the hospital for this series of palliative operations was high. The patients who survived the operation, however, were relieved of their most troublesome symptoms: pain, jaundice, pruritus and episodes of chills and fever, except in a very few instances. Only 4 per cent of the surviving patients derived no benefit from the operation. These patients were the ones in whom the carcinoma was farthest advanced at the time of operation and most of them died within three months after the procedure. The average length of life after leaving the hospital for the patients with verified carcinoma of the head of the pancreas was 102 months. The patients in whom carcinoma of the head of the pancreas and chronic pancreatitis could not definitely be distinguished lived, on an average, 119 months. The discrepancy between these figures could be accounted for by the inclusion in the latter group of several patients with simple pancreatitis. That some patients with a questionable diagnosis did survive from three to six and a half years lends weight to this opinion. Nevertheless, the number of incorrect diagnoses in a large series of cases is relatively few for the surgeon can form a rather accurate opinion of the condition with which he is dealing but is restrained from offering a dogmatic statement because a specimen for biopsy was not taken.

#### Bulletin of Neurol. Inst. of New York, New York

4: 221-402 (Oct.) 1935

- Congenital Tumors in Rostral Portion of Third Ventricle. Their Diagnosis by Encephalography and Ventriculography. I. M. Davidoff and C. C. Dyke. New York—p. 221.
- Sense of Smell. A. Relative Importance of Volume and Pressure of Impulse for Sensation of Smell and Nature of Olfactory Process. C. A. Elsberg, E. D. Brewer and I. Levy. New York—p. 264.
- Id. VI. Trigeminal Effects of Odorous Substances. C. A. Elsberg, I. Levy and E. D. Brewer. New York—p. 270.
- Id. VII. Odorous Substances to Be Used for Tests of Olfactory Sense. C. A. Elsberg, F. D. Brewer and I. Levy. New York—p. 286.
- Cavum Septi Pellucidum and Cavum Vergae. A. Wolf and T. E. Bamford. New York—p. 294.
- Syndrome of Adenoma of Pancreas. L. Feiner, S. E. Soltz and P. Haas, with technical assistance of Thelma Robinson. New York—p. 310.
- Central Fixure of Human Cerebrum. J. Rosett. New York—p. 315.
- Method of Accurately Determining Vertebrae to Be Exposed During Laminectomy. H. K. Bondar. New York—p. 399.

**Congenital Tumors in Third Ventricle.**—Davidoff and Dyke present nine cases of congenital tumors within the third ventricle that were diagnosed by encephalography or ventriculography and confirmed at operation and by histologic examination. The positive data in the encephalogram which indicate a tumor within the anterior portion of the third ventricle are usually symmetrical dilatation of the lateral ventricles which are in their normal position filling defect in the anterior portion of the third ventricle, a concave or straight margin to the

anterior border of the air caudal to the filling defect, normal sized or slightly dilated aqueduct of Sylvius and fourth ventricle if visualized, incomplete filling or deformity of the cisternae interpeduncularis and pontis and dorsal displacement of the medial cerebral sulci. In ventriculograms the positive data, when a single puncture is done, are the failure of air to pass at all or with difficulty into the other lateral or third ventricle, the deviation of the septum pellucidum to either side, the presence of a filling defect in the anterior portion of the third ventricle and a concave or straight margin to the anterior border of the air caudal to the filling defect and, when a double puncture is done, bilateral symmetrical dilatation of the lateral ventricles which are situated in their normal position cutting off of the air shadow in the foramen of Monro, a filling defect in the anterior portion of the third ventricle and a concave or straight margin to the anterior border of the air caudal to the filling defect. A defect in the septum pellucidum can be diagnosed by the absence of the shadow of the septum in the antero-posterior view and a fusion of the lateral ventricles across the midline.

**Method of Determining Vertebrae to Be Exposed During Laminectomy.**—Bondar describes a procedure devised by Elsberg by which an accurate determination of the vertebral arches is possible. A tattoo mark is made opposite one spinous process and a roentgenogram of the spine taken after a small lead arrow marker has been placed exactly opposite the tattoo mark. One or more days before the operation the patient is placed in the prone position. A spinous process at approximately the site of the disease is selected. At this level, but at a point from 1 to 2 cm from the midline, an intradermal injection of a drop of indigo carmine is made or a drop of the dye is placed on the skin and a puncture through the dye is made into the skin with a fine needle. The lead arrow marker is placed over the tattoo spot with the point toward the midline and is held in place with adhesive plaster. An anteroposterior roentgenogram of the spine is then taken and the exact location of the tattoo spot relative to the vertebrae is determined. The tattoo mark may readily be seen throughout the course of the operation, and by means of it through its correlation with the lead arrow and the roentgenologist's report, the surgeon can at all times know the vertebra with which he is dealing.

#### Illinois Medical Journal, Chicago

68: 477-560 (Dec.) 1935

- Influence of Ionization on Vasomotor Rhinitis. Clinical and Experimental Studies. A. R. Hollender and M. Gorn. Chicago—p. 493.
- Maize Collapsé (Postoperative Massive Atelectasis). R. J. Maier. Chicago—p. 498.
- \*Clinical View of Bone Marrow Depression. E. M. Stevenson. Bloomington—p. 505.
- Tracheotomy. Indications. Technique. Postoperative Management. R. D. Russell. Chicago—p. 508.
- Present Status of Surgery of Sympathetic Nervous System. C. de Takáts. Chicago—p. 512.
- Acute Metastatic Spinal Epidural Abscess. Two Cases. D. Stanley. Decatur—p. 515.
- What Shall We Do with the Unhealthy Cervix? C. H. Cardner. Chicago—p. 517.
- Surgical Treatment of Claustrum. S. J. Meyer. Chicago—p. 520.
- Tonsillectomy in Pulmonary Tuberculosis. S. Broadwell. Springfield—p. 526.
- Organized Medicine Must Direct Medical Activities of America. Special Committee composed of Fitz Patrick Hayden, White Brooks, Geiger Griffin, H. McKenna, Steinhoff, Levinson and Parker—p. 528.
- Adequate Treatment of Early Syphilis. S. J. Zakon and M. Dorne. Chicago—p. 531.
- Congenital Absence of Left Tube and Ovary. Report of Case. C. I. White. Kewanee—p. 536.
- Malignant Hypertension. T. M. Smith. Chicago—p. 539.
- Principles of Excretory Urography in Urologic Diagnosis. A. J. Hecker. Chicago—p. 542.
- Acute Abdominal Pain in Juvenile Diabetes Mellitus. A. I. Newcomb. Chicago—p. 544.
- Codaine Dermatitis. B. Skarudin. Manteno—p. 546.
- Experimental Study on Tylor's Mechanism. C. Canturco. Urbana—p. 547.
- Contribution to Whooping Cough Immunization. C. F. Schilder. Peoria—p. 549.
- Psychosis Associated with Infectious Diseases. B. Feinchen. Chicago—p. 553.

**Clinical View of Bone Marrow Depression.**—From clinical observation Stevenson has noted that infection is an associated factor in granulocytopenia. Drug ingestion may be associated with granulocytopenia but there are cases in which



no history of drug ingestion can be obtained. In a series of cases of bone marrow depression, all proved cases of granulocytopenia, he has noted that, while drug ingestion over a long period of time may have been a causative factor in some cases, there are other cases in which no drugs were taken at any time or were taken only at the onset of illness. Even in the cases in which there has been a history of drug ingestion prior to the onset of the granulocytopenia it is reasonable to assume that the drugs were taken in the hope of relieving symptoms arising from some previously existing condition. He selected six cases, supported by current literature, that suggest to him that granulocytopenia is a disease entity of bone marrow depression which may be precipitated but not caused by infection or drugs. This bone marrow depression may be an individual characteristic in a subject who retains a form of the juvenile type of bone marrow in adult life. Either his total white count remains comparatively low or his granulocytes, as found in the juvenile, are relatively low in number. In an individual so constituted, bone marrow depression may occur which in another individual with a normal bone marrow would have but little, if any, effect. It seems reasonable to assume that in such an individual bone marrow depression can easily be precipitated by infection, drugs or any other outside stimulus which in a normal individual produces no unusual bone marrow response, that either the infection was superimposed on an abnormal bone marrow or produced an abnormal response in a juvenile bone marrow, that drugs taken over a long period of time are most likely taken for relief of symptoms existing long before the onset of and not the cause of granulocytopenia.

### Journal of Allergy, St. Louis

7:1100 (Nov.) 1935

- \*Experiments to Determine Whether Allergically Active Substance in Ragweed Pollen Extract Is a Single Entity or Multiple. A. H. W. Caulfield, M. H. Brown and E. T. Waters. Toronto—p. 1.
- \*Local Serum Sickness in Man Following Intracutaneous Injection of Small Amounts of Antiserum. Beatrice Carrier, Seegal, Devorah Khorazo and Julia Mehlman. New York—p. 27.
- Pertinent Factors Influencing Comparative Skin Tests on Arm. Katherine L. Bowman. Brooklyn—p. 39.
- Trichophytin and Monilia Extracts in Allergic Dermatoses. Report of Cases. Edna S. Pennington. Nashville, Tenn.—p. 54.
- Is There an Increased Suspension Stability of Erythrocytes in Allergic Disease? R. V. Ellis. Minneapolis—p. 64.
- Buckwheat Sensitivity. G. I. Blumstein. Philadelphia—p. 74.
- Pollen Survey in Pittsburgh. Pennsylvania 1934. E. B. Scott, L. H. Crip and M. A. Green. Pittsburgh—p. 80.

**Active Substance in Ragweed Pollen Extract.**—By means of the Prausnitz-Küstner reaction and an in vitro absorption modification of this reaction, Caulfield and his associates have shown that there is more than one allergically active substance in ragweed pollen solution and further that there is more than one specific reagin in the serum of the ragweed hay fever individual. By the same tests they found that the part played by one allergically active substance varies considerably in different patients, as judged by the quantitative amount of the different specifically active reagins present in the serum of each patient.

**Local Serum Sickness.**—The production of local serum reaction suggested itself to Seegal and her collaborators as a possible method for carrying out a comparative study of the ability of a number of foreign serums to produce serum sickness in man. Serums were chosen from four species of animals that had received immunizing injections of a bacterial antigen. Purified antibody solutions (globulin fraction of serum) from two of the animal species also were used. Injections of 0.1 cc. of undiluted immune serum were given intracutaneously in the forearm. Local serum sickness characterized by wheals, erythema and itching occurred. 1. Horse antipneumococcus type I serum produced a severe protracted local serum sickness in eight of the twelve individuals tested. 2. Sheep hemolytic antistreptococcus serum produced a severe reaction in nine of the subjects and a slight reaction in one. 3. Rabbit antipneumococcus type I serum produced a slight local reaction in only one individual. 4. Bovine diphtheria antitoxin serum produced a strong reaction in two and a moderate or slight reaction in six. 5. Equine tetanus anti-

toxin globulin elicited only two moderate and three slight reactions. 6. Bovine tetanus antitoxin globulin produced the mildest possible reaction in three individuals. It is possible that the local serum sickness reaction may be helpful in studying the tendency of a therapeutic serum to produce serum sickness.

### Journal of Immunology, Baltimore

29:343-426 (Nov.) 1935

- Studies on Chemical Nature of Schwartzman Active Substances. K. Apitz. Boston—p. 343.
- Agglutinins and Conditioned Reflex. L. M. Kopeloff, N. Kopeloff and E. Posselt. New York—p. 359.
- Schick Reactions and Serum Antitoxin Titrations on Children Injected with Diphtheria Formol Toxoid. C. N. Leach. New York, and G. Poch. Eisenstadt, Austria—p. 367.
- Serologic Tests with Amino Acids. J. Von Der Scheer and K. Landsteiner. New York—p. 371.
- Neutralization of Bacteriophage. C. E. Clifton, Elizabeth Mueller and W. Rogers. San Francisco—p. 377.
- Procedure and Apparatus for Preservation in Lyophilic Form of Serum and Other Biologic Substances. E. W. Flosdorf and S. Mudd. Philadelphia—p. 389.

### Journal of Infectious Diseases, Chicago

57:223-346 (Nov-Dec.) 1935

- Duration of Demonstrable Antibodies in Serum of Rabbits Immunized with Heat Killed Type II and Type III Pneumococci. E. G. Stillman. New York—p. 223.
- Reaction of Partially Immunized Rabbits to Inhalation of Type I Pneumococci. E. G. Stillman and R. Z. Schulz. New York—p. 233.
- Reaction of Normal and Partially Immunized Rabbits to Intranasal Instillation of Type I Pneumococci. E. G. Stillman and R. Z. Schulz. New York—p. 238.
- Effect of Bacterial Numbers on Minimal Bacteriostatic Concentrations. I. P. Garrod. London, England—p. 247.
- \*Presence of Typhus Virus in Wild Rats in New York City. Clara Nigg. New York—p. 252.
- Cryptococci. Their Identification by Morphology and by Serology. Rhoda W. Benham. New York—p. 255.
- The Dissociation of Clostridium Welchii. F. A. Stevens. New York—p. 275.
- Virulence of Haemophilus Pertussis. J. A. Toomey, Katherine Ranta and W. S. Takacs. Cleveland—p. 286.
- \*Complement Fixation in Blastomycosis. D. S. Martin. Durham, N. C.—p. 291.
- Intestinal Flora of Monkeys and Dogs During Digestion and Following Direct Introduction of Food Substances into Cecum and Isolated Segments of Bowel. Elizabeth Petran. Chicago—p. 296.
- Malarial Parasite Infecting All Blood and Blood Forming Cells of Birds. C. G. Huff and W. Bloom. Chicago—p. 315.
- Specificity of Negative Phase in Preinjection Production. L. Hektoen and W. H. Welker. Chicago—p. 337.

**Typhus Virus in Wild Rats in New York City.**—Nigg obtained fifty-one wild rats from the metropolitan area of New York City during the months of September to December inclusive. Of the fifty-one rats, sixteen showed weakly positive Weil-Felix reactions, nine with traces of agglutination in 1:10 dilution, five in 1:20 and two in 1:40. The brain of each of these sixteen rats was emulsified and injected into two guinea pigs, one fifth and one tenth of the brain respectively being used for intraperitoneal inoculation. In no case was typhus virus recovered and none of the thirty-two guinea pigs injected from these sixteen rats developed a febrile reaction, but, when subsequently tested with a laboratory strain of typhus, five showed what perhaps might be a certain degree of immunity. Although typhus virus was not actually recovered from the rats, the finding of what appeared to be a more or less marked immunizing effect following the injection of brain from rats that showed weak Weil-Felix reactions may possibly indicate previous typhus infection in such rats. The examination of a larger number of rats obtained from different localities during all seasons of the year seem indicated.

**Complement Fixation in Blastomycosis.**—Martin describes a complement fixation test in blastomycosis. A saline suspension of blastomycetes is used as the antigen. In all other details the procedure is the same as that used in routine Wassermann tests. Five strains of blastomycetes isolated from five cases of blastomycosis were similar morphologically, culturally and serologically. Complement fixing antibodies in easily detectable quantities were present in the serum of three patients with generalized blastomycosis. No detectable antibodies were found in one patient with the disease. Serum from seventy-eight control cases contained no complement fixing antibodies for these organisms. Two serums containing complement fixing

antibodies for blastomycetes contained no demonstrable antibodies for *Sporotrichum*, *Geotrichum*, *Monilia albicans*, *Monilia candida*, *Coccidioides immitis*, *Mycoderma cutaneum* or *Histoplasma capsulatum*. There is no relation between the clinical condition of the patient and the presence of complement fixing antibodies in the circulating blood. A positive complement fixation test with a 1:4 dilution of the patient's serum is diagnostic of the disease. A negative complement fixation test does not exclude infection with blastomycetes.

### Journal of Lab and Clinical Medicine, St. Louis

21 111 224 (Nov.) 1935

- Bacteriologic Studies on Fecal Streptococci and Lactic Acid Streptococci A. L. Kleckner Philadelphia—p. 111
- \*Quinine Test for Hyperthyroidism I. Bram Philadelphia—p. 123
- Congenital Thinning of Wall of Right Anterior Aortic Sinus of Valsalva Anterior Interventricular Septal Defect (Probably Bulbar Septal) Slight Dextroposition of Aorta and Bacterial Endocarditis V. Sprekel and H. L. Stewart Philadelphia—p. 128
- Studies on Anthrax Clinical Report of Ten Human Cases H. Gold Chester, Pa.—p. 134
- Incidence of Nondiabetic Glycosuria B. Y. Glassberg St. Louis—p. 152
- Chemical Study of Alum Diphtheria Toxoid Precipitate E. Buxbaum and C. K. Greenwald New York—p. 157
- Morphologic Sugar Metabolism in Human Leukocyte Culture G. Wallach Berlin Germany—p. 163
- Neufeld Reaction in Certain Cases of Pneumococcal Septicemia Sara A. Scudder New York—p. 168
- The Doctor as Contributor to Civilization E. Podolsky Brooklyn—p. 169
- Hematologic Nomenclature Eukocyte and Korocyte Suggested in Emendation of the Designations Juvenile and Stab in Schilling Hemogram A. P. Hitchens Washington D. C.—p. 173
- \*New Method for Determination of Cutaneous Capillary Blood Pressure J. P. Baumberger and Kathleen Bardwell Stanford University Calif.—p. 179
- Limitations of Colorimetric Analyses by Present Methods E. L. Armstrong Erie, Pa. and M. L. Kuder Washington D. C.—p. 181
- Induced Oil Practical Method of Preparation R. M. Balyeat L. E. Seyler and V. Outlier Oklahoma City—p. 187
- Method of Eliminating Blastocysts Hominis from Cultures of Endometrial Histology W. S. Stone Washington D. C.—p. 190
- Method of Estimating Both Basal and Exercise Cardiac Output on Dogs W. V. Cox J. W. Hawkins and H. F. Robertson Boston—p. 192
- Automatically Recording Colony Counting Apparatus P. L. Varney St. Louis—p. 207
- Chemical Diagnosis of Pregnancy by Detection of Estrin in Urine M. J. Schmulevitz and H. B. Wylie Baltimore—p. 210

**Quinine Test for Hyperthyroidism**—Bram states that from his observations in a series of more than 4,000 cases it appears that the quinine test for thyrotoxicemia is a dependable guide in diagnosis, the frequency of error not exceeding 5 per cent. As with basal metabolic studies, the test does not discriminate between toxic adenoma and exophthalmic goiter. The tolerance for quinine in hyperthyroidism appears to vary in direct proportion with the height of the basal metabolism rate and is fairly parallel with it, serving as a guide in progress under treatment. Depending on the severity of active hyperthyroidism, patients are capable of taking 30 grams (2 Gm.) or more of quinine sulfate or hydrobromide daily for weeks without evidence of cinchonism. In the occasional instance of a quinine negative subject who presented an otherwise typical case of exophthalmic goiter it was discovered that the author was dealing with an uncommon case of exophthalmic goiter, apparently without the element of hyperthyroidism. In these patients despite nervousness sweating wasting exophthalmos heart hurry and trembling, the basal metabolic rate remained within normal limits. The quinine test is as dependable as the basal metabolic rate and as accurate a guide in treatment. It has the advantage of requiring no costly apparatus in its performance nor does it require basal conditions of starvation and rest.

**Cutaneous Capillary Blood Pressure**—Baumberger and Bardwell state that their method while direct is suitable only for research purposes. The method has yielded results comparable to those of Carrier and Rehberg which have been obtained by students as well as by trained investigators. The instrument consists of an arm hinged at one end to an upright and bearing a small glass bead on the other end. The arm is bent downward at right angles to carry the bead. In operation the glass bead is applied to the skin by a sliding weight on

the calibrated arm. The skin surface is moved at a moderate speed, with the glass ball riding over the skin. When the skin surface itself cannot be moved easily, the ball may be made to make excursions back and forth by having the fulcrum of the lever on a ratchet and pinion. If a white flash appears as the ball passes by, the weight is moved nearer the fulcrum until the pink color of the skin is undisturbed by the weights. The actual surface of the ball that makes contact is determined by noting the diameter of the ink spot on the ball after application to the ink-smeared skin. This area divided into the pressure, calculated by the law of levers gives a value convertible into millimeters of mercury. The method avoids the danger of stasis and gives a statistical average surface that is constant. The adjustment of pressure is convenient and accurate. The importance of determination of capillary blood pressure in clinical work may be expected to increase. Already this measurement is of importance in urticaria, inflammation, circulatory shock, edema, and the like.

**Pregnancy and the Detection of Estrogenic Substance in Urine**—During the course of an investigation of the phenol excretion in pregnancy, Schmulevitz and Wylie devised a short method of chemically detecting estrogenic substance in the urine of pregnant women. The method consists in the extraction of the substance from the urine with ether and its detection by coupling with diazotized paranitro-aniline (the color reagent) to form a deep colored azo dye, a reaction first noted by Harington and Schüpbach. The term estrogenic substance used by the authors includes theelin (ketohydroxyestrin) and theelol (trihydroxyestrin) and is synonymous with female sex hormone, folliculin, menformon and progynon. The composition of the reagents employed, the preparation of paranitrodiazonium chloride solution, the method and principles are given. Results obtained with the method in eighty-nine urinalyses of fifty-six patients suggest that it may be used for the chemical diagnosis of pregnancy.

### Journal of Nervous and Mental Disease, New York

82: 613 740 (Dec.) 1935

- Paraphasic Signs in Diffuse Lesions of the Brain F. J. Curran and P. Schilder New York—p. 613
- John Hughlings Jackson F. Kennedy New York—p. 637
- The Handicap of the Patient's Fears. O. H. P. Pepper Philadelphia—p. 639
- \*New Treatment of Cerebral Hemorrhage and of Its Effects R. Colella and G. Pizzillo Palermo Italy—p. 653
- Avertin and Encephalography Preliminary Report J. E. Scarff New York—p. 660

**Treatment of Cerebral Hemorrhage**—Colella and Pizzillo have influenced the focus of cerebral hemorrhage and corrected its effects to a considerable degree, and sometimes even totally, by intramuscular autohemotherapy in thirty-five instances. The operation consists in drawing from 25 to 30 cc. of blood from a vein and immediately reinjecting it deeply into the gluteal region of the sound side. Before puncturing the vein it is advisable to draw a few cubic centimeters of a 25 per cent solution of sodium citrate into the syringe in order to prevent a premature coagulation of the blood. The intramuscular autohemotherapeutic injections are hemostatic and useful for curing cerebral hemorrhage. The beneficial effect varies in degree but is constant. Recovery is observed even in the most acute cases especially in those of traumatism of the head in which a genuine cerebral hemorrhage is encountered. The effects will be the better the sooner curative intervention is attempted. Autohemotherapy helps to cure cerebral hemorrhage before during and after the attack. It is most indicated as a preventive in cases of arterial hypertension with predisposing hereditary conditions for arteriosclerotic patients who often preannounce the attack by vertigo debility of limbs and unilateral tremor of the extremities. These effects are avoided and immediately corrected after the injection which decreases intracranial blood pressure rapidly. The blood injection allows a differential diagnosis between real cerebral hemorrhage and cerebral softening. Although cerebral hemorrhage is much more frequent than softening and the symptoms are often identical they may be distinguished because the curative effect is high with focus of cerebral hemorrhage and nil with cases of cerebral softening.

**Kentucky Medical Journal, Bowling Green**

33: 565 610 (Dec.) 1935

- Radiography in Obstetrics R P Ball Chattanooga Tenn—p 571  
 Hypothyroidism Without Myxedema C H Fortune, Lexington—p 575  
 Infantile Paralysis Report of Case Treated with Rosenow Serum  
 J G Carpenter Stanford—p 579  
 Diabetes Complications of Diabetes A C McCarty Louisville—p 580  
 Id. Diagnosis of Diabetes A D Kennedy Louisville—p 582  
 Id Diet and Insulin S A Overstreet Louisville—p 584  
 Id Diabetic Surgery M Thompson Louisville—p 586  
 Ocular Headaches W S Snyder Frankfort—p 589  
 Chronic Constipation Notes on Etiology and Treatment R C Alley  
 Lexington—p 590  
 Management of Acute Head Injuries C Pilcher Nashville Tenn—  
 p 592  
 Hyperparathyroidism C E Gaupin Louisville—p 597

**Minnesota Medicine, St. Paul**

18 761 826 (Dec.) 1935

- Some of the Newer Developments in Hyperthyroidism and Hyperpara-  
 thyroidism F H Lahey Boston—p 761  
 Simplified Obstetric Care E D Plass Iowa City—p 768  
 Present Status of Clinical Allergy H L Alexander St. Louis—  
 p 773  
 Continuous Intravenous Infusion Consideration of Its Possible Dangers  
 T G Orr Kansas City Kan—p 778  
 Phenolphthalein Eruptions C W Laymon Minneapolis—p 782  
 External Fronto-Ethmoidal Operation Critical Review of the Lit-  
 erature and Details of Technique in Use at the Mayn Clinic H I  
 Lillie and H L Williams Rochester—p 786  
 Radium Treatment of Nonmalignant Conditions R E Fricke  
 Rochester—p 789  
 Pyrethrum in Treatment of Scabies S E Sweetzer and J W Tedder  
 Minneapolis—p 793

**Continuous Intravenous Infusion**—The chief dangers in intravenous therapy that Orr warns against are reactions with chills and fever overburdening of the circulating system by a rapid increase in blood volume production of general edema and edema of the lungs kidney irritation with blood in the urine and thrombosis at the site of intravenous injection with embolism. He suggests that, as a safety factor, the use of continuous infusions be discontinued as a routine method. The intermittent method of giving fluid dextrose and sodium chloride by vein reduces the tendency to give too much fluid and lessens the likelihood of thrombosis and embolism. Hypodermoclysis is a safer method of giving fluid than continuous phlebotomy.

**New England Journal of Medicine, Boston**

213: 1109 1158 (Dec. 5) 1935

- Cancer of Larvix Study of Two Hundred and Two Cases with End  
 Results S W Carlin Boston—p 1109  
 Giant Diverticula or Reduplications of Intestinal Tract Report of  
 Three Cases H W Hudson Jr. Brookline Mass—p 1121  
 Diabetes Insipidus Treatment with Posterior Lobe Pituitary Powder  
 Intranasally A Marble Boston—p 1131  
 Deplorable Development in Economics of Radiation Therapy F E  
 Wheatley Boston—p 1134  
 Reconstruction of Vagina from Portion of Sigmoid Report of Case  
 H C Pitts Providence R I—p 1136  
 Dr William Beaumont W R Steiner Hartford Conn—p 1137

**New Orleans Medical and Surgical Journal**

88 335 412 (Dec.) 1935

- Hyperthyroidism A Street, Vicksburg Miss—p 335  
 Resection of Presacral Nerve for Relief of Pelvic Pain F Hagaman  
 Jackson, Miss—p 339  
 Diagnosis and Treatment of Amebic Hepatic Abscess M DeBailey and  
 A. Ochsner New Orleans—p 347  
 Chronic Abdominal Discomfort in Children J Signorelli and H Hansen  
 New Orleans—p 353  
 Discussion of Etiology and Significance of Mydriasis L C Davis  
 Greenville Miss—p 357  
 Comment on Foreign Bodies in Food and Air Passages R Harris  
 Jackson Miss—p 359  
 Congenital Hypertrophic Pyloric Stenosis R A Strong New Orleans  
 —p 362

**Chronic Abdominal Discomfort in Children**—In attempting to ascribe a direct cause for chronic abdominal discomfort in children Signorelli and Hansen feel that the most logical conditions to be considered are mesenteric lymphadenitis, chronic appendicitis and the action of a heterogeneous intestinal flora. They observed twenty-five apparently healthy children between the ages of 5 and 12 years complaining of chronic abdominal discomfort or pain with anorexia constipation and lassitude.

The data suggested that the cases represent the results of pathologic changes of the mesenteric glands or that the symbiotic action of bacteria formed a heterogeneous intestinal flora. Therefore, theorizing along this line of thought the authors undertook to apply empirically a procedure that would increase the hydrochloric acid of the stomach, hoping thus to strengthen the efficiency of the "gastric barrier," which exercises so considerable an influence over the formation of enlarged mesenteric glands, and the creation of a symbiosis of the organisms forming the intestinal flora. It appears reasonable that the addition of hydrochloric acid even to the normal stomach would hinder or entirely stop bacterial activity in these regions and overcome the symptom complex. Accordingly despite the presence of normal acid values in the majority of the cases, dilute hydrochloric acid was prescribed in doses varying from 25 to 40 drops (16 to 25 cc.) three times a day, to be taken diluted with water at each meal. Marked improvement occurred, with relief of all symptoms except anorexia in four of the twenty-five cases. After one to two months of such treatment the acid was stopped. Many of the children have now been free of medication for as long as nine months without a recurrence of symptoms.

**New York State Journal of Medicine, New York**

35 1063 1122 (Nov. 1) 1935

- Surgery of Chest Acute Empyema of Pleura H Lilienthal New  
 York—p 1063  
 Id. Nontuberculous Pulmonary Suppuration C Eggers New York  
 —p 1068  
 Id. Diagnosis and Surgical Treatment of Anterior and Posterior Medi-  
 astinal Tumors Report of Case of Posterior Mediastinal Tumor  
 S W Harrington Rochester Minn—p 1073  
 Id. Surgery in Pulmonary Tuberculosis Present Status F Berry  
 New York—p 1080  
 Chronic Illness Due to Dietary Deficiency M L Drazin, New York  
 —p 1087  
 Observations on Treatment of Mental Disorders in Small Groups. E V  
 Boudreau Syracuse—p 1095  
 Rupture of Uterus During Curettage with Expulsion of Intestines Case  
 Report R F Ward and H A Metz, New York—p 1100  
 How Psychiatric Services Are Being Utilized by Schools of New York  
 State F L. Patry Albany—p 1101

**Public Health Reports, Washington, D C**

50: 1639 1666 (Nov. 22) 1935

- Further Studies of Effect of Radium on Bacteria R R. Spencer—  
 p 1642  
 Technique Which Completely Excludes Air Contamination of Bacterial  
 Cultures R R. Spencer—p 1656

50 1667 1718 (Nov. 29) 1935

- Influenza and Pneumonia Mortality in a Group of About Ninety Five  
 Cities in the United States During Four Minor Epidemics 1930-1935  
 with a Summary for 1920-1935 S D Collins and Mary Cover—  
 p 1668

**Radiology, Syracuse, N Y**

25 521-650 (Nov.) 1935

- \*Effects of Thorium Dioxide Sol (Thorotrast) on Human Liver L C  
 Rigler R Koucky and A L. Abraham Minneapolis—p 521  
 Rib Defects Simulating Pulmonary Cavitation C Jones, Cleveland  
 —p 533  
 Retardation of Bone Growth Following Roentgen Irradiation of Exten-  
 sive Nevocarcinoma of Skin in an Infant Four Months of Age. R H  
 Stevens Detroit—p 538  
 Further Discussion of Relations of Antrum and Cap to Gallbladder as  
 Factors in Emptying the Gallbladder N B Newcomer and Elizabeth  
 Newcomer Denver—p 547  
 Roentgenologic Aspects of Osteomyelitis of Skull K Kornblum and  
 P J Hodes Philadelphia—p 566  
 Arthrokatadysia of Hip Joint Report of Five Cases D H Levinthal  
 and I Wilm Chicago—p 580  
 Some Lawsuits I Have Met and Some of the Lessons To Be Learned  
 from Them J S Trostler Chicago—p 586  
 Pulmonary Syphilis in Adults Report of Case W W Robinson  
 Memphis Tenn—p 596  
 Radiation Therapy of Female Pelvis for Benign Lesions Report of  
 Three Hundred and Ninety Six Cases V M Moore Grand Rapids  
 Mich—p 600  
 \*Roentgen Examination of Intercostal Fossa of the Knee Joint G.  
 Danelius and I F Miller Chicago—p 605  
 Discrete Pulmonary Lesions Roentgenologically Considered J M  
 Fruchter Philadelphia—p 609  
 Methods of Enhancing Roentgen Ray Action A J Delario Paterson  
 N J—p 617

**Effects of Colloidal Thorium Dioxide on Liver**—During the last three and a half years Rigler and his co-workers used colloidal thorium dioxide in examining 175 patients who were almost all suffering from malignant tumors. A high

incidence of liver metastases was found on roentgen examination by the method. Little or no harm can be demonstrated as yet from the use of the thorium in small doses in the roentgen examination of the liver and spleen in man. Nevertheless caution should be exercised in its use because the eventual radioactivity of the material has not yet been determined, it is eliminated very slowly if at all so that a foreign body will remain in the liver and spleen and the extension into the lymph nodes in greater concentration may produce atrophy of the lymphoid tissue the eventual results of which cannot be predicted as yet. Necropsy in thirty-five cases revealed little or no damage to the liver that could be ascribed to the procedure of hepatohenography.

**Intercondyloid Fossa of Knee Joint**—Danehus and Miller state that a roentgenogram taken in the usual manner does not permit the intercondyloid space of the knee joint to be seen, because the anterior portion of the intercondyloid part of the femur is superimposed on this space. Many times the spines of the tibia are partly covered by this portion of bone. In a special view, a normal knee reveals the space semicircular in outline, with its edges smooth and regular. The spines of the tibia are always visible, and the articulating surfaces of the tibia and femur are seen as well as or better than on the ordinary anteroposterior view. The intercondyloid fossa can be visualized on a roentgenogram by a simple technique. As the roof of the intercondyloid fossa is tilted for 60 degrees the knee joint is flexed for the same amount. It is advisable to use a lead sheet underneath the film in order to obliterate the back scatter. The central ray is directed exactly below the inferior tip of the patella and is perpendicular to the longitudinal axis of the tibia. A narrow cone should always be used. A number of typical pathologic conditions are best illustrated by this view, which should always be used when vague intra-articular disturbances are present. Pathologic changes it present are more sharply demonstrated. The visualization of calcified crucial ligaments, calcified interligamentary bodies and erosion of the surfaces of the intercondyloid borders of the femur may aid in the differential diagnosis of internal derangement about the knee joint.

### South Carolina Medical Assn. Journal, Greenville

31 207-226 (Nov.) 1935

- Subphrenic Abscess G. T. Tyler Jr. Greenville —p. 207  
Pentobarbital Sodium as an Obstetric Analgesic J. D. Parker Greenville —p. 210  
Discussion of Some of the Fundamental Principles in Caring for a Patient with Acute Abdomen S. E. Harmon Columbia —p. 212  
Artificial Pneumothorax G. S. Clinckscale Anderson —p. 213

### Southwestern Medicine, Phoenix, Ariz

19 369-410 (Nov.) 1935

- Surgical Treatment in Pulmonary Tuberculosis F. P. Miller El Paso Texas —p. 369  
Severing Adhesions in Artificial Pneumothorax S. R. King and H. A. Patterson Fort Stanton N. M. —p. 370  
Radiation Therapy in Various Surface Lesions A. Soland Los Angeles —p. 376  
The General Aspects of Surgery on Large Intestines C. F. Dixon and C. A. Stevens Rochester Minn. —p. 378  
Acute Contagious Diseases from the Standpoint of the Pediatrician A. J. Scott Jr. Los Angeles —p. 382  
Avalion of the Tibial Tubercle S. R. King Fort Stanton N. M. —p. 388  
The Management of Peritonitis Based on New Conception J. A. Borgen and C. F. Dixon Rochester Minn. —p. 391  
Treatment of Deformities of Anterior Poliomyelitis S. J. Haas San Francisco —p. 395

**Severing Adhesions in Artificial Pneumothorax**—King and Patterson severed adhesions by the closed intrapleural pneumolysis method in ten consecutive cases. The electro-surgical method was used. A stereoscopic examination was made in all cases in which artificial pneumothorax after having been continued from three to six months was unsuccessful because of pleural adhesions. If there was a possibility of these adhesions being severed a thoracoscopic examination was advised. The preoperative preparation of the patient for the thoracoscopic examination and intrapleural pneumolysis is the same as for any major thoracic operation. One or two days before the

operation a pneumothorax refill is given and if there is an appreciable amount of pleural fluid present it is aspirated. One fourth grain (0.016 Gm.) of morphine sulfate is given just before the patient is taken to the operating room. From the stereoscopic study a site usually in the anterior axillary line in the fourth interspace, is selected for the introduction of the first trocar and bachelite cannula. The skin, intercostal tissues and pleura are infiltrated with a 1 per cent solution of procaine hydrochloride and a small skin incision is made through which the trocar and cannula are inserted. The thoracoscope is inserted through the cannula and the site for the introduction of the second cannula is determined. In the majority of the cases reported the second cannula was introduced at the lower angle of the scapula. After the electrode has been inserted through the anterior cannula with the thoracoscope in the posterior cannula and the proper approach to the adhesion obtained the adhesion is coagulated and severed with the high frequency current. The authors have found that satisfactory results are obtained by setting the Boye unit at 32 for coagulation and 52 for cutting. Following an operation each wound is closed with a deep suture of catgut and a small round pressure bandage is placed over the incision to prevent emphysema. The postoperative treatment is absolute bed rest with the side operated on up for from one to two days. Coughing is controlled with codeine or with morphine when necessary. A reading of the intrapleural pressure is taken during the first week following the operation and refills are given as indicated. An intrapleural pneumolysis is indicated in all cases in which unsatisfactory collapse has been obtained after from three to six months in contracting fibrotic adhesions that are obliterating the pleural space in cases that require a high positive pressure to maintain an adequate collapse and when an early closure of the cavity is desired to prevent spread of the infection to other parts of the body. In the authors' cases no free bleeding was encountered during operation. In several cases slight oozing resulted which was easily controlled with the coagulative current. The results obtained have been gratifying. The authors state that the procedure should be in more general use among those treating tuberculosis.

### Surgery, Gynecology and Obstetrics, Chicago

611 713-846 (Dec.) 1935

- Free Transplantation of Skin Evaluation of Methods F. D. Pitter Ann Arbor Mich. —p. 713  
Biliary Dyssynergia Physiologic Obstruction of Common Bile Duct R. R. Best and A. F. Hicken Omaha —p. 721  
Practical Roentgen Pelvimetry Comparison of Methods in One Hundred Cases I. J. Friedman I. M. Nichols and A. F. Rossetto New York —p. 735  
Estrogenic Principle Common Etiologic Factor of Endometrial Hyperplasia Uterine Fibroids and Endometriomas J. T. Witherspoon New Orleans —p. 743  
Histologic Studies of Endometrium During Various Phases of Menstrual Cycle W. E. Herrell and A. C. Broders Rochester Minn. —p. 751  
Experimental Study of Effects of Constriction of Great Vessels of Heart W. J. Kiser Wichita Kan. —p. 765  
Reliable Method for Testing Sterility of Surgical Catgut Sutures R. O. Clock New York —p. 789  
Perirenal and Peripelvic Fibrolipomata Their Relation to Replacement Lipomata of Kidney F. Lieberthal Chicago —p. 794  
Simple Seven Suture Method of Bilateral Vagino-Intestinal Implantation Report of Twelve Cases I. H. Homan San Francisco —p. 802  
Arteriovenous Aneurysm of Superior Thyroid Artery and Vein J. J. Ransohoff Cincinnati —p. 811  
New Method of Reduction of Dislocation at Shoulder Joint A. A. Zierold Minneapolis —p. 818  
Osteomas of Nasal Accessory Sinuses Report of Case Illustrating Transcranial Approach to Orbital Structures W. B. Hoover and C. Horrax Boston —p. 821  
Useful Diagnostic Sign in Vertebral Injury R. Sot-Hall and K. O. Haldeman San Francisco —p. 827  
New Operative Procedure for Brachial Birth Palsy F. H. Lavalie B. H. Moore Chicago —p. 831  
Postoperative or Ventral Hernia Method for Relief of Tension After Repair A. R. Dickson Battle Creek, Mich. —p. 831

**Biliary Dyssynergia**—By means of direct roentgenographic visualization of the biliary tract with radiopaque oils Best and Hicken have been able to demonstrate in four patients that an increased tone or spasticity of the cholecystoduodenal sphincter mechanism is capable of producing a mechanical obstruction thus causing a retention of bile. The dyssynergia of the

common duct sphincter may be independent of, or associated with, a generalized infection of the biliary tract, the presence of stones, strictures, kinks or pancreatitis. The extirpation of the gallbladder, the removal of the stones, the division of the stricture and the drainage of the infected bile ducts do not always overcome the spasticity of the sphincter, for in some cases it persisted after these operative measures. Physiologic evidence indicates that the choledochoduodenal sphincteric mechanism has sufficient contractile force to prevent the flow of bile into the duodenum, thereby increasing the intraductal pressure and causing pain and discomfort. Such a concept offers a rational explanation for occurrence of "gallstone colic" in the absence of stones or infection and for the so-called hepatic neuralgia and accounts for the persistence of gallbladder distress in some cholecystomized patients. A dyssynergia, or spastic dysfunction of the choledochal sphincter, provides an anatomic blockade of the common duct, resulting in a retention of bile. The stagnant bile becomes infected, and calculi are then precipitated. In such cases a cholecystectomy would not necessarily be curative, for, following the removal of the gallbladder, the intrinsic spasm of the common bile duct sphincter may continue. The four patients were studied by lipiodine visualization for as long as thirty-three days following a cholecystectomy, and the sphincterismus still persisted. It is probable that the proper postoperative medical regimen, including those substances which relax the choledochal sphincter, such as atropine, magnesium sulfate or fats would do much to correct the abnormal spasticity of the choledochal sphincter and thus tend to minimize the unsatisfactory results that sometimes follow cholecystectomies.

**Testing Sterility of Surgical Catgut Sutures**—The bacteriologic test that Clock outlines is based primarily on the technic devised in 1926 by Benjamin White and successfully used by him for several years for testing the sterility of catgut sutures. It also embodies the essentials of the method proposed by Meleney and Chatfield. The efficiency and the reliability of the test have been demonstrated over a period of five consecutive years (1930-1934), during which time it has been applied in testing the sterility of 12,522 surgical sutures, comprising twenty-four foreign and twelve American brands, as well as several thousand experimental sutures. During this time the use of the test has successfully detected nonsterility of 62.5 per cent of twenty-four foreign brands and 50 per cent of twelve American brands, and it has made it possible to demonstrate the fallacy of chemical sterilization of catgut sutures by revealing nonsterility of the 334 experimental lots which were subjected to the action of twenty-seven different chemical compounds under a wide variety of conditions.

**Reduction of Dislocations at Shoulder Joint**—In reducing dislocations at the shoulder joint by Zierold's method the patient is placed on his back, the operator standing at his affected shoulder and facing his feet. The affected arm is then taken by the wrist and with the elbow extended is abducted to 90 degrees. The elbow of the operator is then placed against the patient's chest wall just below the axilla and the palm of his hand engages the bend of the patient's elbow. Using the base of his palm as a fulcrum, the operator then further flexes the patient's arm at the elbow joint, thus making use of a powerful lever which makes controlled traction on the dislocated humerus. The operator completes the maneuver by still further flexing the arm at the elbow and adducting the humerus to 45 degrees. At times it will be found that the operator's forearm is too short to provide adequate leverage and in this circumstance a pad of the necessary thickness is introduced between his elbow and the chest wall of the patient. The author has used this method for the last four or five years in the surgical service at the Minneapolis General Hospital and in his private practice. It has proved generally satisfactory and has not been attended by any unfortunate complications or results. He believes that the method has several advantages over the methods now in vogue. 1 It may be used in all cases of dislocation of the shoulder joint even those complicated by fracture of the surgical neck, the tuberosity, or the shaft of the humerus or the glenoid fossa. 2 The maneuver may be employed without additional injury to the bone or soft tissue

and, in fact, often aids in the reduction of the accompanying fractures. 3 No force is applied to the dome of the axilla and consequently there is no danger of injury to vessels or nerves such as often occurs when the foot is placed in the axilla. 4 The method requires no great expenditure of strength and affords powerful controlled traction without the help of an assistant or special apparatus. 5 The method may be used in many cases without anesthesia.

**Diagnostic Sign in Vertebral Injuries**—For several years Soto-Hall and Haldeman have employed a maneuver that is extremely helpful in the diagnosis of vertebral injuries. The patient is placed flat on his back without pillows, and the examiner places one hand on the sternum of the patient, exerting a slight pressure so that no flexion can take place at either the lumbar or the dorsal region of the spine. At the same time the examiner's other hand is placed under the occiput and with this hand the head is bent on the neck, then slowly but forcibly the head and neck are flexed on the sternum. This produces a progressive pull on the posterior spinous ligaments, starting at the ligamentum nuchae and being transmitted downward to the interspinous ligaments until it reaches the spinous process of the injured vertebra. On this it acts as a lever, gently compressing the body and producing pain, which the patient localizes very accurately. The usefulness of the sign rests on the following facts: 1 It gives the exact location of recent fractures without moving or disturbing the patient. 2 It guides the technician in obtaining roentgenograms at the proper level. 3 It aids in the differentiation between the injury of bone and damage to soft tissue. 4 It is helpful in medicolegal cases because it does not attract the attention of the patient to the lesion and he is not aware of the area that is being tested. 5 A negative test almost eliminates the diagnosis of recent vertebral injury. 6 Confirmation of the clinical observations is given by experiments on rabbits.

### Tennessee State Medical Assn. Journal, Nashville

28: 445-486 (Nov.) 1935

- Management of Traumatic Cases Preliminary Management of the Seriously Injured D. Eve, Jr. Nashville—p. 445  
 Id. Brain Injuries Their Management. T. D. McKinney Nashville—p. 449  
 Id. Fracture of Spine and Pelvis R. W. Billington Nashville—p. 453  
 Id. Open Wounds Including Compound Fractures. C. F. Webb, Jackson—p. 458  
 Id. Traumatic Shock. P. A. Perkins Memphis—p. 461  
 \*Treatment of Epidemic Meningitis R. B. Wood Knoxville—p. 471

**Treatment of Epidemic Meningitis**—Wood analyzes 100 cases of epidemic meningitis occurring in Knoxville and treated at the General Hospital during the period 1930 to 1934 inclusive. What might be considered a mild epidemic occurred in 1931 at which time fifty cases were observed. Previous and subsequent to this the incidence of admissions corresponds closely to that of other general hospitals. A preponderance of males is noted during the epidemic, the proportion to females being about five to three. The mortality rate was noted to vary exceedingly. At the beginning of the epidemic the cases seemed very virulent, both in the charity and in private practice. The duration of time elapsing before treatment is instituted is an important factor in mortality rates. In ward cases the mortality rate in 1933 and 1934 was 68 per cent, while in private cases for the whole five-year period it was only 31.3 per cent. The mortality rate is more favorable in young adults and less favorable in the very young and particularly in the elderly. The mortality for all ages was 47 per cent. 50 per cent in patients less than 10 years of age. 41 per cent from 10 to 20. 50 per cent from 20 to 30. 56 per cent from 30 to 40. No patient recovered who was more than 40 years of age. The average hospital stay of the patients who recovered was 17.3 days. Complications including spinal block, blindness, deafness and paralysis of muscles developed in 18 per cent. The patients who recovered received an average of 50 cc of serum in the first twenty-four hour period. The average patient in the mortality group received 41 cc. The average number of punctures was 7.8 per patient. Cisternal puncture was resorted to in only nine cases. One patient treated throughout by this method received eight



punctures Because of the fact that a meningococcemia exists in the early stages of this disease, it is the author's custom to give serum twice daily for the first two days of treatment At the same time lumbar drainage is done once or twice daily, according to the severity of the case, and the fluid removed is replaced by serum There is no doubt that considerable shock can be produced by too rapid and too much withdrawal of fluid A preliminary opiate will be of much aid in combating shock, and frequently general anesthesia is indicated when there is extreme hyperesthesia or opisthotonos Too much cannot be said with reference to the general nursing care Adequate rest and fluid intake must be maintained

### West Virginia Medical Journal, Charleston

31 533 580 (Dec.) 1935

- Advances in Pneumothorax G H Barksdale Charleston —p 533  
Correlation of Physical and Roentgen Signs in Examination of Chest A V Cadden Hopemont —p 536  
Treatment and Prognosis of Nontuberculous Lung Abscess Analysis of Twelve Cases Sobieska S Hall and H V Thomas Fairmont —p 540  
Diagnosis of Intestinal Tuberculosis D Salkin Hopemont —p 547  
Treatment of Laryngeal Tuberculosis R S Wolfe Elkins —p 552  
Resection of Presacral Nerve in Attempt to Relieve Dysmenorrhea and Intractable Pelvic Pain H A Bailey and J E Cannaday Charleston —p 556  
Malaria in Northern West Virginia Case Report L C McGee Elkins —p 563

**Resection of Presacral Nerve in Dysmenorrhea**—During the last two and a half years, Bailey and Cannaday resected the presacral nerve in fifty cases for the relief of dysmenorrhea and pelvic pain The results in forty-seven cases are reported, insufficient time having elapsed to state the results obtained in the remaining three There were seven cases of chronic pelvic pain associated with severe dysmenorrhea six were completely relieved and one was unimproved Of fourteen cases of chronic pelvic pain in which the pain was not noticeably increased during the menstrual periods, ten were completely relieved two definitely improved and two unimproved Of twenty cases of severe dysmenorrhea, eleven were completely relieved, five definitely improved and four unimproved There were three cases of dyspareunia one associated with constant pain one was completely relieved and two were definitely improved In one case of pelvic pain, following low abdominal operation, resection was done with complete relief In one case, chronic pelvic pain and severe constipation were completely relieved One patient with a cancer of the uterus with almost unendurable pain experienced complete relief Fourteen patients had additional pelvic operations during the process of sympathetic neurectomy and all who had remaining appendices were relieved of them There was one death in this series due to peritonitis A description of the anatomy of the superior hypogastric plexus (presacral nerve) and its variations in appearance and structure are discussed The agonizing pain so often associated with inoperable neoplasms in the pelvis in which no involvement of the bone and no blockage of the ureters are present can be completely relieved by extensive pelvic sympathectomy The resection of the nerve does not interfere in any way with the function of the bladder, pregnancy or parturition The functions or mechanisms of the female generative organs are not disturbed It is not accompanied by any motor paralysis or sensory paralysis of the skin Presacral neurectomy is preferable to chordotomy for the relief of intractable pelvic pain produced by inoperable malignant conditions in cases without involvement of the bone

### Wisconsin Medical Journal, Madison

34: 793-876 (Nov.) 1935

- Controlling Our Destiny E H Cary Dallas Texas —p 805  
Use of Human Convalescent Serum in Infectious Diseases M Hargrove Milwaukee —p 812  
Medicolegal Aspects of Alcoholism F L Kozelka Madison —p 816  
Diseases of the Colon F J Hodges Ann Arbor Mich —p 821  
Clinical Conditions Associated with Congenital Anomalies of the Small Intestine A H Montgomery Chicago —p 826  
Management of Cataract in the Insane V A Chapman Milwaukee —p 831  
Telegraphic Surgery in Children H L Kreichmer Chicago —p 832

### FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below Single case reports and trials of new drugs are usually omitted

### British Journal of Ophthalmology, London

19 593 640 (Nov.) 1935

- Thyroid Carcinoma with Metastasis in Ciliary Body Report of Case H C Orr and I L Jobstone —p 593  
Atypical Retinitis Pigmentosa Associated with Obesity Polydactyly Hypogonadism and Mental Retardation (the Lawrence Moon Biedl Syndrome) Clinical and Genealogical Notes on Case L H Savin —p 597  
Precise Origin of Corneal Pitting H Herbert —p 600  
Kinescopy Objective and Subjective (Practical Kinescope S) S Holth —p 603  
Rationalized Miracle in Medieval England W J Rutherford —p 609  
Myopia and Nearwork H Lipschutz —p 611  
Ametropia and Sex J A Wilson —p 613

### Journal of Pathology and Bacteriology, Edinburgh

41 373 580 (Nov.) 1935

- Value of Cytologic Examination of Milk for Detection of Mycobacterium Tuberculosis S T Cowan and L Maddocks —p 373  
\*Histology and Pathogenesis of Bilateral Cortical Necrosis of Kidney in Pregnancy S De Navasquez —p 385  
Experimental and Idiopathic Siderosis in Cats J Taylor D Stiven and E W Reid —p 397  
Four Cases of Infective Endocarditis Due to Organisms Similar to Haemophilus Para Influenzae and One Case Due to a Pleomorphic Streptobacillus C H Stuart Harris, A Q Wells A B Rosher, F P Mackie and G S Wilson —p 407  
Localization of Response to Estrogenic Compounds in Organs of Male Mice H Burrows —p 423  
Essential Neurotropism of Yellow Fever Virus G M Findlay and Ruby O Stern —p 431  
Serologic Relationships of Two Hundred and Fifty Strains of Bacillus Diphtheriae J F Murray —p 439  
Further Observations on Types of Corynebacterium Diphtheriae Helen A Wright and May H Christison in collaboration with A I K Rankin R C M Pearson and J A Cuthbert —p 447  
Massive Extramedullary Bone Marrow Formation in Case of Pernicious Anemia A Lyall —p 469  
Malignant Melanoma in Colored Races Role of Trauma in Its Causation T F Hewer —p 473  
Production of Reversed Passive Anaphylaxis in the Guinea Pig C E Kellitt —p 479  
Study of Pneumococcal Allergy Anaphylaxis and Immunity D Harley —p 491  
\*Classification of Hemolytic Streptococci from Nose and Throat of Normal Human Beings by Means of Precipitin and Biochemical Tests R Hare —p 499  
Classification of Hemolytic Streptococci from Stools of Normal Pregnant Women and of Cases of Scarlet Fever by Means of Precipitin and Biochemical Tests R Hare and W R Maxted —p 513  
\*Presence of Hemolytic and Other Streptococci on Human Skin I Colebrook W R Maxted and A M Johns —p 521  
Reactions of Chorio-Allantoic Membrane of Chick to Certain Physical and Bacterial Agents N E Goldsworthy and W Moppett —p 529  
Factor in Malignant Tumours Which Increases Permeability of Dermis E. Boyland and D McClean —p 553

### Bilateral Cortical Necrosis of Kidney in Pregnancy

De Navasquez investigated histologically twelve cases of bilateral cortical necrosis of pregnancy No evidence of previous glomerular, tubular or vascular disease has been found The kidneys previous to the onset of symmetrical cortical necrosis of pregnancy are histologically normal The primary change is a diffuse necrosis of the wall of the peripheral intralobular arteries and their terminal branches The resulting ischaemia causes necrosis of the renal cortex The so called thrombosis consists of conglutination of blood cells without fibrin formation or organization and is a terminal event consequent on stasis Anatomic and experimental evidence demonstrates the high functional specialization of the intralobular arteries It is suggested that this factor renders the vessels more susceptible to circulating agents of a 'toxic' nature hence the localization of the vascular necrosis to the kidneys

**Classification of Hemolytic Streptococci**—By means of the group precipitin reaction Hare classified streptococci able to give  $\beta$  hemolysis on blood agar from the nose and throat of normal human beings Only about one third of these strains belong to group A, the group into which the majority of strains from infections in man can be placed He believes that his results confirm indirectly the observations of Smith, Paine, Courmont and Sedalhan, and Colebrook on the etiology of

puerperal hemolytic streptococcal infections of the uterus all of whom have brought forward convincing evidence of the transfer of infecting organisms from the nose or throat of some one in attendance in a large proportion of infected parturient women. It is possible that the same could be shown to apply to infections of wounds in civil or military life and to outbreaks of respiratory tract infection not traceable to the milk supply (Glover and Griffith). Now that a potentially pathogenic strain can be defined with some degree of precision and that such strains have a comparatively limited habitat in nature, control of hemolytic streptococcus infections is more practicable than was the case a few years ago.

**Streptococci on Human Skin**—Colebrook and his associates did not find hemolytic streptococci of the kind usually associated with human puerperal infections (Lancefield's group A) on the perineal and perianal skin of 160 women attending an antepartum department and the risk of such streptococci being conveyed to the genital tract from the feces is considered to be remote. Group A hemolytic streptococci were isolated from the hands of seven of 181 normal individuals (3.8 per cent). It seems probable that they were derived from the respiratory tract. Treatment of the mother's hands during labor by an antiseptic that persists on the skin for some hours is advocated. Nonhemolytic types of streptococci (chiefly *Streptococcus viridans*) were found on nearly all the hands investigated but not on the skin of the interscapular region.

### Journal of State Medicine, London

43: 621 632 (Nov.) 1935

- The Place of a Thoracic Surgical Unit in Tuberculosis Scheme T. H. Sellers—p. 621  
Value of Radiology in Diagnosis of Pulmonary Tuberculosis S. C. Shanks—p. 629  
Tonsil and Adenoid Removal in Children A. B. Favey Smith—p. 636  
Sedimentation Rate in Rheumatoid Arthritis C. R. L. Orme—p. 644  
Synovial Fluid in Chronic Arthritis D. H. Collins—p. 652  
Caloric Feeding of Infants Dorothy G. E. Potter—p. 658  
Welfare of Women in Industry L. P. Lockhart—p. 667

### Journal of Tropical Medicine and Hygiene, London

38: 277 288 (Nov. 15) 1935

- Agglutination of Red Blood Corpuscles of Man, Animals and Birds by Salivary Glands of *Anopheles Maculipennis* P. C. Shute—p. 277  
Treatment of Diabetes Mellitus S. Vatcher and M. Douglas—p. 278  
Blackwater Fever in an Infant Native of Nigeria Case S. Jackson—p. 284  
Tropical Helminths Brief Note A. Castellani and G. Scotti—p. 284

### Lancet, London

2: 1043 1100 (Nov. 9) 1935

- The New Purpose of Medicine G. Newman—p. 1043  
Congenital and Recurrent Dislocation of the Patella Treated by Transplantation of Patellar Tendon I. Forty—p. 1046  
\*Therapeutic Application of Phenylmercuric Salts Observations on Use of Basic Phenylmercuric Nitrate in Gynecology L. H. Biskind—p. 1049  
Treatment of Carcinoma of Lower End of Esophagus R. Maier—p. 1052  
\*Hemochromatosis and Heredity R. D. Lawrence—p. 1055

**Therapeutic Use of Phenylmercuric Salts**—Biskind has previously used basic phenylmercuric nitrate in treating 100 cases of specific and nonspecific endocervicitis and associated conditions. The results showed an invariably favorable response in all the conditions encountered both specific and nonspecific except when *Trichomonas vaginalis* was the inciting agent. The character of the infection could be changed often by a single application. When complete and rapid clinical recovery was not attained there was enough improvement to allow of the successful use of adjuvant treatment. In effective concentrations both as a local application (1:1,250) and as a douche (1:25,000), basic phenylmercuric nitrate was nontoxic and almost nonirritant to the vaginal mucous membrane, and it proved effective in the presence of tissues. When it was used persistently as a douche the patients did not develop symptoms of mercury poisoning and the output of mercury in the urine was negligible. The author has subsequently used basic phenylmercuric nitrate in forty-one cases seen in the dispensary and twenty-two in private practice. The former comprise eleven cases of vaginitis in children (five gonorrheal and six due to

a mixed infection, including one due to *Bacillus coli*), thirteen cases of *Trichomonas vaginalis* infection in adults, fourteen cases of endocervicitis (seven gonorrheal and seven nonspecific), one case of rectovaginal fistula, one case in which a slough followed vaginal hysterectomy, and one case of paracervical sinus with infection following cauterization. The latter group consisted of eleven cases of gonorrheal endocervicitis, two of *trichomonas* infection, four of nonspecific vaginitis, four of nonspecific endocervicitis, and one case of tinea infection involving the perineum and labia. The method of treatment in each of the conditions is given. Laboratory investigations on the utility of phenylmercuric salts, in particular basic phenylmercuric nitrate, indicate that these compounds combine with the highest bactericidal and fungicidal potency yet discovered for any class of compounds a relatively low toxicity for animals and for man.

**Hemochromatosis and Heredity**—Lawrence describes a family of nine in which two brothers had hemochromatosis. Three other brothers and the mother, but none of the sisters, had some signs of the disease. The most widely accepted view of hemochromatosis is that it is a congenital disease, an inborn error of iron metabolism, a deposition of iron pigments in various tissues which has been going on from birth but accumulates sufficiently to cause disease only in middle age. If so one would expect to find cases with a hereditary influence and Sheldon has collected such evidence in five cases. A striking feature of the disease is an overwhelming preponderance in males, but few females being affected. In view of the pedigree of his patients the author suggests that the disease is hereditarily sex-linked and is comparable with hemophilia in this respect. The patients of Frisch and Sheldon are suggestive of a sex-linked heredity. The author believes that his hypothesis has the merit of fitting in both with the apparently congenital nature of this inborn error of metabolism and with the overwhelmingly male preponderance.

### Medical Journal of Australia, Sydney

2: 611 642 (Nov. 2) 1935

- Treatment of Fractures Historical Review N. G. Sutton—p. 611  
Acute Bone Infections Involving Joints C. K. Smith—p. 620  
Mechanical Artificial Respiration H. W. Davies—p. 673

### South African Medical Journal, Cape Town

9: 737 776 (Nov. 9) 1935

- Our Land Is Our Population Satisfactory? Acclimatization of Animals P. J. du Toit—p. 739  
Id. Are We Making the Best of Our Future Citizens in South Africa from the Time of Conception? K. B. A. McNeil—p. 741  
Cardiac Failure During Anesthesia K. Bremer—p. 755  
The Atais Hot Mineral Springs J. Helman—p. 755

### Journal of Oriental Medicine, Dairen, So Manchuria

23: 37 60 (Oct.) 1935

- The Bones of the Foot in Chinese Y. Nakayama—p. 37  
Coronary Artery of the Heart and Aortic Arch in the Chinese K. Miyashita—p. 44  
Atmospheric Pollution in Manchurian Cities B. Taoaka—p. 45  
Studies on *Trichomonas vaginalis* Donnée IV. Resistance Phagocytosis and Encystment of *Trichomonas vaginalis* K. Matsuda—p. 47  
Subacute Lymphatic Leukemia Case (Thymic Leukemia?) Y. Matsuda—p. 48  
Examinations on Tubercle Bacillus of Fowl I. Spread of Fowl Tuberculosis to Mukden Manchukuo II. Hiroki—p. 49  
Id. III. Morphologic and Biologic Properties of Hiroki—p. 50  
Id. III. Pathologic and Anatomic Changes of Fowl Tuberculosis and Pathogenesis of Fowl Tuberculosis Bacillus for Animals II. Hiroki—p. 51  
Bovine Tuberculosis I. Spread of Bovine Tuberculosis in Manchukuo and Interesting So-Called Engonic Strain of Bovine Tubercle Bacilli II. Hiroki—p. 52  
Susceptibility of the Manchurian Ground Squirrel (*Citellus mongolicus* *Ramosus Thomas*) to Tuberculosis II. Hiroki—p. 53  
Acid Fast Saprophytes Obtained from Human and Animal Tuberculosis Examination Material H. Hiroki—p. 54  
Anthropologic Studies on Chinese S. Takeya—p. 55  
Clinical Observation on Endemic Goiter in Jehol U. Takei Koh, T. Sada, A. Kakinuma, T. Kakoh, K. Takehisa, M. Suzuki, Y. Suzuki, Y. O. M. Onmyoji, A. Ito and Chi—p. 57  
Infantile Spasmodophilia Case Y. Morita—p. 58  
Clinical Studies of Tuberculosis of Children in Manchukuo Statistical Observations Y. Yamaoka, M. Tanaka and C. W. Hsu—p. 59

**Archives des Maladies de l'Appareil Digestif, Paris**

25 897 1008 (Nov.) 1935

- Pseudotumor of Stomach in Course of Pernicious Anemia Case P E Weil and Benzaquen—p 897  
Time Table of Gastric Secretion M J Demole—p 907  
Curve of Secretion of Gastric Ferments M Bruno da Costa—p 921

**Gastric Secretion**—Because of the difficulties in drawing conclusions from the usual gastric analysis, Demole examined the possibility of adopting as the important criterion the hour at which the secretion attains its maximum rather than the degree of acidity or the quantity secreted. He studied the curves of acidity thus given by the histamine test in 120 cases. The technic was as follows: After the injection of 1 cc of 0.001 Gm of histamine hydrochloride the stomach content was removed through an Einhorn sound every ten or fifteen minutes for from one to one and a half hours. Each specimen was examined for free acid, total acid and quantity of secretion. Only the first was used in the graphs. By this means he divided the secretion into three types that with the maximal acidity within thirty minutes of the histamine injection (tachy-secretion), that rising more or less rapidly in from twenty to forty minutes and maintaining this level (plateau form), and that attaining a maximal acidity forty-five minutes or later and decreasing soon after (bradysecretion). A table was made to determine whether these forms fitted with any clinical syndromes. It was readily demonstrable that a normal gastric function was compatible with any form of curve. Furthermore it was obvious that no curve was specific for any particular digestive disease. On the other hand a certain division of the cases was striking. Thus the gastric and duodenal ulcers did not excite acid secretion in the same manner in that the hour of maximal secretion was usually later in the duodenal than in the gastric types. This was only a relative matter but it seems to indicate that what difference there is is more distinct in the hour of maximal secretion than in the total rise of acidity.

**Archives de Medecine et Pharmacie Navales, Paris**

125 339 542 (July Aug Sept.) 1935

- New Method of Artificial Respiration Héderer—p 371  
Roentgenologic Examination of Gallbladder by Opacity Methods Negric—p 381  
Study of Primary Tuberculous Infection in Navy J Querangal des Esarts—p 411  
Analysis of Butters Technic Brisou—p 433  
Chemical Treatment of Boiler Water Thévenot—p 453

**Method of Artificial Respiration**—Hederer proposes an improvement in artificial respiration by combining the expiratory movements of Schafer with a new inspiratory method. The procedure necessitates two operators. The new inspiratory maneuvers are performed by the operator kneeling at the head of the patient who is lying in the usual Schafer position. He grasps both elbows of the subject and counting 4, 5, 6 (after the expiratory 1, 2, 3) he draws the elbows up toward the vertical by rapid traction and without displacing either the hands or the head of the subject. At the count of six he replaces the elbows. The total combination of expiratory and inspiratory movements takes about five seconds. This combination, the author believes does much to preserve the physiologic advantages of the Schafer method but also corrects some of the disadvantages by including an active inspiratory maneuver.

**Prensa Medica Argentina, Buenos Aires**

22 2247 2292 (Nov 20) 1935 Partial Index

- Histamine in Diagnosis of Pulmonary Tuberculosis C A Videla and C Lamarque—p 2265  
Chronic Laryngitis and Gastro-Intestinal Toxemia Case G F Roldan Verges and A Hernandez—p 2272  
Tuberculin by Oral Route in Diagnosis and Treatment of Tuberculosis J Pou—p 2275

**Histamine Test in Diagnosis of Pulmonary Tuberculosis**—Videla and Lamarque state that the subcutaneous injection of 1 cc of a 1 per thousand histamine solution produces transient local and general reactions in patients both with and without pulmonary tuberculosis. In the latter respiratory alterations do not appear. In the former the injection is followed within from three to five minutes by modifications of the vesicular murmur and the appearance in the pathologic

zones of the lung, of moist rales audible at auscultation (positive result of the test). The respiratory and cardiovascular changes produced by the test in tuberculous patients are transient. The test is harmless and of value as an aid in the diagnosis of pulmonary tuberculosis with slight auscultatory signs. It gave positive results in 90 per cent of the author's twenty cases.

**Revista Españ de las Enferm. del Ap Digest., Madrid**

1 723 800 (Oct.) 1935

- Hepatorenal Insufficiency and Gastro-Intestinal Disturbances J Alucha—p 723  
Gastric Tuberculosis and Gastric Disturbances of Tuberculous Patients A Rodriguez Ollerios and P de la Viesca—p 745  
Repercussion of Diseases of Biliary Tract on Some Other Organs H G Mogens—p 765

**Gastric Tuberculosis and Gastric Disturbances of Tuberculous Patients**—Rodriguez Ollerios and de la Viesca state that gastric tuberculosis is rare but that gastric disturbances are frequently found in patients suffering from tuberculosis of organs other than the stomach, especially the lungs. The authors examined, at intervals, forty-four cases of pulmonary tuberculosis for gastric changes in the various forms of the disease by the following methods: determination of the gastric secretion in a fasting stomach, morphologic and bacteriologic examinations of the sediment of the gastric content, studies of the gastric secretion curves after administration of the Katsch and Kalk meal of contrast substance, tests of gastric insufflation by the Henning and Norpeth technic, chromoscopy, histamine test, roentgen examination of the gastric mucosa after its coating with a thin layer of the opaque substance and, in twenty-three cases, gastroscopy. The presence of gastritis was verified in nearly all cases. The type of gastritis in tuberculous patients is characterized by abundant secretion in a fasting stomach, large amount of cells in association with gram negative flora in the sediment, especially in the gastric content of diminished acidity, dissociation of the chromoscopic functions (elimination of the dye) and the intensity of acidity of the gastric content and presence of fine furrows in the relief of the gastric mucosa, which are seen by the roentgenogram and which are due to malnutrition rather than to atrophy of the mucosa. The authors report a case in which in a person aged 26 with residual tuberculosis of the lungs and of the peritoneum, an erroneous diagnosis of peptic ulcer was made on the strength of recurrent melenas, vomiting of blood and certain data of the roentgen examination. It was found by the study of the resected portion of the stomach that the hemorrhages originated in a follicular gastritis.

**Archiv für klinische Chirurgie, Berlin**

184:1 190 (Nov 18) 1935 Partial Index

- Electrocoagulation of Gastric Ganglion in Trigeminal Neuralgia E Hertel—p 1  
Predisposition of Persons with Dilated Veins in Lower Extremities to Thrombosis After Operation or Delivery M Matyas—p 26  
Value of Beck's Method of Drilling in Delayed Union and in Pseudarthrosis L Frankenthal—p 30  
Surgical Treatment of Cancer of Colon F Koch—p 39  
Symptoms and Treatment of Tuberculosis of Epididymis R Herliu—p 56

**Surgical Treatment of Cancer of Colon**—Koch reports the results obtained in 116 cases of carcinoma of the colon in which operation was performed by O Lofberg at the Malmo General Hospital between 1917 and 1931. Palpation of the tumor was possible in 48 per cent of the cases while the correctness of the roentgenologic diagnosis was established in 75 per cent. Operation was possible in only 40 per cent of the cases. Primary resection was favored as the operation of choice and was carried out in forty-two cases. The immediate mortality was 16.6 per cent. Acute obstruction complicated 32.7 per cent of the 116 cases. Carlsbad salt and liquid petrolatum were administered immediately after the operation. The patients were able to leave the bed after two weeks. The average stay in the hospital was one month. A follow up study established that 66 per cent of the cases in which radical operation was performed were free from recurrence after five years.

**Tuberculosis of Epididymis**—Herbst states that because of the variability in allergic properties of patients the tuberculin reaction is not a reliable criterion in the diagnosis of

tuberculosis of the epididymis The Oppenheim urethral reaction is valuable in a greater percentage of tuberculous cases than in the nontuberculous, although a negative response does not rule out tuberculosis In the presence of genital tuberculosis, tubercle bacilli are excreted in the urine and can be demonstrated with certainty by the Lowenstein method of culture Bacilluria was demonstrated in practically all their cases (one exception) of tuberculous epididymitis The author therefore considers the Löwenstein culture method a procedure of positive diagnostic value Jadassohn's and Wildbolz's supposition of the existence of tuberculosis without a tubercle finds support in the author's demonstration of the presence of tubercle bacilli in the urine The Löwenstein method of taking cultures of urine may serve as an indicator for the simultaneous existence of a tuberculous process in the kidney, especially in cases in which the urine presents few pathologic elements for examination Bacilluria is frequently observed in these atypical forms of renal tuberculosis The author found that the bacilluria persisted long after epididymectomy This suggests besides the hematogenous spread the possibility of an intracanalicular extension of the infection Patients subjected to roentgen irradiation likewise excrete bacilli in the urine for a long time, even in the presence of improvement in the symptoms A positive Löwenstein culture is an index of continuance of an active process The author considers epididymectomy the operation of choice Roentgen therapy consumes much time and is uncertain The diseased prostate and seminal vesicles are treated conservatively

### Deutsches Archiv für klinische Medizin, Berlin

178 217 340 (Nov 14) 1935 Partial Index

- \*Significance of Hypophysis for Regulation of Blood Pressure Demonstrated in Two Cases E Kylin—p 217
- Relation of Residual Nitrogen to Urea Nitrogen in Blood Serum W Nonnenbruch and J Weiser—p 239
- \*Congenital Paramyotonia E. Schott—p 255
- \*Hepatolienal Syndromes in Brucella Abortus Infection F Diehl and F Roth—p 271
- Studies on Changes in Predisposition to Infections Significance of Cholesterol and Lecithin for Immunity Particularly for Phagocytosis H Horster and E Dorbath—p 289
- Regulation of Blood Sugar and Heredity Tolerance Tests on Forty Pairs of Twins M Werner—p 308

**The Hypophysis and the Blood Pressure**—Kylin directs attention to his efforts to differentiate from the large group of essential hypertension a subgroup in which a hyperfunction of a part of the hypophysis plays an important part The menopausal is the main form of hypertension considered by the author to be caused by a hypophyseal disturbance In addition to increased blood pressure these patients have a tendency to hyperglycemia and eventually to glycosuria, hyperuricemia, hyperpotassemia, hypocalcemia and increased basal metabolism Moreover, there is a reduction in the epinephrine blood sugar curve a considerable reduction in the hypoglycemic phase of the blood sugar curve following a dextrose tolerance test and a tendency to adiposity and articular disturbances The author shows that the symptomatology of this form of hypertension, which develops especially following the menopause, largely resembles that of Cushing's basophil hyperpituitarism He discusses a case of Cushing's disease which presents a transitional form to the menopausal hypertension and a case of basophil hypopituitarism or Simmonds disease and shows that this case is in almost every respect the exact opposite of the case of Cushing's basophil hyperpituitarism These two cases demonstrate the importance of the hypophysis for the blood pressure, in that basophil hyperpituitarism leads to hypertension, whereas basophil hypopituitarism produces hypotension

**Congenital Paramyotonia**—Schott describes his observations on a family in which five members have the characteristic symptoms of congenital paramyotonia (Thomsen's disease) When kept warm, the patients are free from symptoms The movements of the hands are impaired only when the hands are cold Mere dipping into cold water is frequently sufficient to produce impairment in the mobility In one of the patients the feeling of cold and of tension begins at the hypothenar eminence of the little finger, in others it commences at the thenar eminence The sensation of paralysis frequently spreads

to the forearm and the upper part of the arm After the member has become warm again, from fifteen to sixty minutes is required before grasping becomes possible The mother of the family states that formerly she had this sensation of numbness also in the face and in the feet but that walking was never impaired She observed the disorder quite early in her children, in her son, for instance, she observed a peculiarity in grasping at the age of 9 months In examining the patients, the author found that the musculature shows changes that largely resemble those of Thomsen's disease The mechanical irritability of the musculature is increased, but idiomyotonic pad does not develop, on the contrary, the musculature shows longitudinal depressions Disturbances in the electrical irritability differ individually However, not only do individual differences play a part in the mechanical and electrical irritability but the season of the year and the temperature in which the tests are made are also determining factors In members of the family who do not suffer from cold numbness the author observed changes indicative of impairment For instance some of them have an increased mechanical irritability of the musculature and others have isolated muscular atrophies with or without numbness The electrocardiograms of members of this family showed a strongly positive T wave The electrocardiograms greatly resemble those observed in patients with myotonic dystrophy Since aminoacetic acid (glycine) has been recommended for the treatment of progressive muscular dystrophy, the author decided to try this treatment in one of his cases of congenital paramyotonia, but several months of treatment were of no avail, there was no change in the symptoms

**Hepatolienal Syndromes in Brucella Abortus Infection**—Diehl and Roth, though pointing out that hepatic and splenic swellings are quite frequent during the acute stage of Brucella abortus infection concerned themselves rather with the hepatolienal syndromes that dominate the clinical picture of Brucella abortus when the usual symptoms of that disorder are absent They give reports of five cases In the first patient, who developed an enlargement of the liver and spleen a year after a febrile disease that was accompanied by severe sweating prolonged jaundice and pains in the upper part of the abdomen, a pernicious anemia developed The suspicion of the existence of a Brucella abortus infection was corroborated by positive agglutination and intracutaneous tests The second patient, a veterinary, developed a febrile disease following an injury of the hand Six months later he had hypertrophy of liver and spleen mild polyglobulism and severe leukopenia After three years a splenomegalic cirrhosis with varicose bleedings was detected and two years later the patient was in the terminal stage of a splenomegalic cirrhosis and died of varicose hemorrhages During the terminal stage the etiologic diagnosis of splenomegalic cirrhosis in Brucella abortus infection was finally made The usual diagnostic methods, the serologic reactions had failed, however, the intracutaneous test with vaccine of Brucella abortus was strongly positive, and cultures of the ascites fluid yielded Brucella abortus organisms The third patient had an attack of jaundice four years before he contracted the Brucella abortus infection Six months after the infection the patient showed the hepatolienal syndrome with enlarged liver and hard splenic tumor The patient died in hepatic coma The Brucella abortus infection had been detected by the agglutination test sixteen days after onset of the febrile disorder and Brucella abortus organisms were detected in the patient's bile The fourth and fifth patients had hepatic cirrhosis and precirrhotic splenic tumor Positive cutaneous reactions were the only indication of the etiology of the disturbances In evaluating the case histories the authors point out that it is noteworthy that a Brucella abortus infection may persist for five years that is much longer than has been assumed heretofore They give their attention to the peculiar immunologic conditions in the case of prolonged persistence of the process In an active process the antibodies may decrease to such an extent that a serologic diagnosis becomes impossible In such cases the cutaneous test may be helpful or the culture of the organism may succeed The authors express the opinion that Brucella abortus infection is chiefly a disease of the reticulo-endothelial system and that the hepatolienal system is an important element of the reticulo-endothelial system and an important factor in the formation of the antibodies

**Munchener medizinische Wochenschrift, Munich**

82 1899 1940 (Nov. 29) 1935 Partial Index

Psoriasis Problem O. Grütz —p. 1899

Articular Swellings Caused by Endocrine Disturbances Ruth Beyer —p. 1902

\*Factors M and N in Human Erythrocytes and Their Practical Significance A. Blinov —p. 1904

Etiology and Therapy of Suppurating Ulcus Serpens of Cornea H. Schmelzer —p. 1906

Therapeutic Resistance of Spirochetes in Animal Experiment A. Feldt —p. 1907

Encephalitis in Varicella Case H. Zischinsky —p. 1908

**Significance of Factors M and N in Erythrocytes** — Blinov reports the results of studies carried out in the blood transfusion institute of Leningrad on 763 persons. It was found that 32.3 per cent had factor M, 21.1 per cent factor N and 46.6 per cent factors M and N. He points out that these percentages are similar to those obtained by other investigators. Further tests were made on twenty-five human embryos aged between 6 and 10 weeks. It proved always possible to detect the factors. Factor M was detected in nine of the embryos, factor N in three, and both factors in thirteen. This indicates that the factors develop in the early stages of embryonal life. The author points out that factors M and N are of forensic importance in cases of disputed paternity. However, since the Leningrad institute has no material on this problem he refrains from further discussion. He calls attention to the fact that a number of investigators insist that factors M and N must be given consideration in the case of repeated blood transfusions. They are of no importance in a first transfusion since the human serum contains no corresponding antibodies. The author was able to prove this in observations on fifty-five primary transfusions. Theoretical reasoning makes it appear possible that complications might develop in the event of repeated transfusions of blood with factors that do not correspond. He investigated this problem in several patients who received repeated blood transfusions, but he was unable to find corroborating evidence.

**Wiener klinische Wochenschrift, Vienna**

48 1471 1502 (Nov. 29) 1935 Partial Index

Roentgen Treatment of Intracranial Disturbances M. Sgalitzer —p. 1471

Reform of Early Clinical Diagnosis of Carcinoma of Uterine Cervix Hinselmann —p. 1478

Case of Tuberculous Articular Rheumatism B. Jochweds —p. 1480

\*Diagnostic Palpation of Abdomen A. Báron —p. 1482

Pharmacology of Coronary Circulation A. Frohlich —p. 1483

Trachoma and Paratrachoma K. Lindner —p. 1487

**Early Diagnosis of Carcinoma of Cervix** —Hinselmann stresses the necessity of colposcopy but deplors that it is rarely done in a satisfactory manner and that because of this the results have been negligible. To be sure a careful colposcopic technique is not enough; clinical experience and a thorough histologic knowledge being indispensable for the proper estimation of the observations. In discussing the cell material of cervical carcinoma, the author stresses the importance of the atypical epithelium in the cervical mucous membrane, which is capable of forming horny tissue. He shows that there are two methods for the recognition of the atypical epithelium on the cervix: the first is Schiller's method of iodization, the second is the optic method which is a further development of the examination with the speculum. He emphasizes that with the colposcope it is possible to recognize the atypical epithelium not only after cornification has taken place but also when only a few parakeratotic layers cover it when only the superficial cells are slightly flattened and even in the absence of these changes. He shows that colposcopy and the iodine test are not meant to replace each other but should be combined. As far as the differentiation of the atypical epithelium is concerned, colposcopy is superior to the iodine test; nevertheless in doubtful cases the author has resorted to it and would not like to dispense with it. He demonstrates the importance of colposcopy for the early diagnosis of cervical carcinoma with a case history.

**Palpation of Abdomen.** —Baron in examining patients in whom chronic appendicitis was suspected observed that the right psoas muscle was frequently sensitive to pressure. He

attempted to improve the palpation of the psoas and found the following procedure most suitable. The patient is told to relax and to breathe deeply. The examiner places the second, third and fourth fingers of the right hand on Poupart's line in the direction of the psoas muscle and presses down slowly and carefully. The patient is told to raise the corresponding leg (with extended knee) until it forms an angle of about 45 degrees. If this is done, the palpating fingers readily localize the psoas muscle or the tense tendon of the minor psoas muscle. The counterpressure of the tense psoas muscle makes possible the palpation of the muscle, even in obese patients. First the sharp tendon of the minor psoas muscle is palpated and then the fingers slide upward and in the median direction. Palpation is always done on both sides. The author studied this method on normal persons and on patients and reached the conclusion that the unpleasant sensations, which are elicited by pressure on the tense muscle and radiate toward the umbilicus or the lower back, are caused by the irritation of the peritoneum that covers this muscle. He thinks that from the standpoint of pain the psoas muscle and the covering peritoneums form a unit. He observed an abnormal sensitivity of the psoas and the covering peritoneum often but not always in apparently healthy persons. The pain was more often noticeable on the right side than on the left side. He thinks that it may be assumed that the greater exertion of the right leg or the neighborhood of a not entirely normal appendix is responsible for this. In sciatica, in myalgias of the sacrospinal and of the gluteal muscles and in so-called static rheumatic disturbances (arthroses) of the lumbar portion of the vertebral column or of the lumbosacral and ileosacral joints, the psoas and peritoneum are likewise frequently painful. Palpation elicits this pain frequently in chronic and during acute appendicitis. In the latter case, the sensitivity is always greatest on the right side. In acute cholecystitis and in some patients with a hypersensitive nervous system, for instance in patients with exophthalmic goiter, the symptom has likewise been observed. The author points out that an inflammation of an intraperitoneal organ may produce pain of the psoas and the covering peritoneum by way of a sensosensory reflex. This reflex is elicited in about 10 per cent of the cases of acute and chronic appendicitis. In case of sensitivity of the psoas and of the covering peritoneum on the right side, pressure on the left psoas and peritoneum elicits a pain in the right hypogastric region. This symptom resembles the Rousing symptom, and the author shows that the Rousing symptom is a mechanical, whereas the sensosensory reflex described by him is a nervous, transmission of pain.

**Zentralblatt für innere Medizin, Leipzig**

58 977 1008 (Nov. 30) 1935

\*Clinical Investigations with Guttadiaphot Method with Especial Consideration of Articular Disorders O. Gulbin —p. 978

**Clinical Studies with Guttadiaphot Method** —Gulbin made comparative tests with drops of blood and drops of serum. With the exception of complete disappearance of the green color in the second strip of absorbent paper and of a difference in the surface distribution and in the width of the multicolored edge the guttadiaphot tests of the serum revealed no peculiarities. A differentiation into normal and pathologic cases was not possible on the basis of these slight changes. The author concluded from this that the serum does not determine the outcome of the guttadiaphot test but that the formed elements of the blood are indispensable for the reaction. The study of a number of serum guttadiaphots in the ultraviolet light revealed a peculiar yellowish green fluorescence of varying intensity on the edges of the drops of serum. However a clinical classification proved impossible since there were no decided differences in the color and fluorescence of the serums from healthy persons and from patients. The author's observations with the guttadiaphot method corroborated largely the results reported in the literature particularly the positive outcome in acute and chronic infections and in secondary anemias. The tests on sixty patients with articular disturbances gave the following results. A negative outcome indicates an articular disturbance of a static or of a degenerative nature. An



infectious, inflammatory articular process is indicated only if the test is repeatedly positive and if other acute or chronic infections can be excluded. Only one positive test or a suspected positive test does not permit a definite conclusion with regard to the type of the articular disorder. The author considers that the test is a valuable help in the diagnosis of articular disturbances.

### Zentralblatt für Gynäkologie, Leipzig

59: 2833-2896 (Nov. 30) 1935 Partial Index

- New Observations and Points of View Regarding Genital Tuberculosis P. Caffier —p. 2833  
Question of Peritoneal Generalization of Benign Ovarian Papillomas F. Posatti —p. 2864  
Restoration of Functioning Menstrual Canal P. Strassmann —p. 2872  
\*Insulin Treatment of Menstrual Disturbances B. Liegner —p. 2883  
Lymphangioma of Uterus E. Löffler —p. 2888

**Insulin Treatment of Menstrual Disturbances**—Liegner agrees with Klaffen that insulin treatment is especially helpful in emaciated women with menstrual disturbances, which may take the form of polymenorrhea, hypomenorrhea or hemorrhagic metropathy. In addition to extreme emaciation, these women exhibit hepatic and gastro-intestinal disturbances (that is, disturbances of the carbohydrate and fat metabolisms), retarded return to normal blood sugar values following sugar tolerance tests, a reduction in the basal metabolism in the presence of a normal or nearly normal specific dynamic protein quotient and slightly increased blood sugar values. It has also been observed that diabetes is often found in the ancestry of these women, that is, their pancreatic deficiency is hereditary. In this connection the author points out that pancreatic deficiency becomes manifest in some as diabetes and in others in a more occult form, such as insular emaciation with its genital sequelae. He reviews the clinical histories of two young women who had amenorrhea and were extremely emaciated and were subjected to insulin treatment. The treatment was begun with three daily injections of 5 units and was gradually increased to three daily injections of 20 units each. Every second day dextrose was given intravenously. This treatment was continued for four weeks and produced a considerable increase in weight, but the amenorrhea was not influenced. The insulin treatment was repeated at intervals of three months and finally was followed by menstruation, after an amenorrhea of several years' duration, which had proved refractory to treatment with ovarian and hypophyseal preparations.

### Vrachebnoe Delo, Kharkov

18 747-818 (Nov. 9) 1935 Partial Index

- Anterior Hypophysis and Metabolism O. A. Steppun and I. Barenblat —p. 747  
Case Infection Complications Following Injections V. P. Petrov —p. 759  
Thrombosis and Embolism G. P. Zaitsev —p. 761  
\*Question of Subarachnoidal Hemorrhages A. N. Zimin —p. 764  
Symptomatology of Cerebrospinal Meningitis Podkin, Trovanovskaya and V. V. Chernikov —p. 769

**Subarachnoidal Hemorrhages**—According to Zimin the clinical picture of a subarachnoidal hemorrhage is characterized by an apoplectic onset frequently with loss of consciousness or mental confusion, headaches, repeated vomiting, psychic and motor excitability, partial or generalized convulsions and at times delirious states. Disturbance of the higher psychic functions is frequently observed. Among the somatic symptoms noted are those caused by meningeal irritation, such as rigidity of the neck, positive Kernig or Brudzinski signs, slow pulse and pathologic reflexes. The cerebrospinal fluid is quite characteristic. It presents a bloody discoloration of varying intensity in the early cases. It is under increased pressure, and the sedimented blood shows no tendency to coagulation. There is a moderate pleocytosis and a faint albumin and globulin reaction. The temperature may be normal or slightly increased but is often subnormal. The author considers subarachnoidal hemorrhage an independent clinical entity presenting a characteristic clinical picture and a definite clinical course. Its etiology is not definitely established. Further light is to be sought in the bacteriologic study of the cerebrospinal fluid, the family and personal history of the patient, the study of epidemic factors pertaining to grip and to epidemic encephalitis, and careful postmortem studies

of fatal cases. The treatment is symptomatic. The author wishes to emphasize the beneficial effect of spinal punctures with removal of from 6 to 15 cc of the cerebrospinal fluid. The cases exhibit a tendency to recurrence and the prognosis must be guarded.

### Hospitalstidende, Copenhagen

78 1097-1124 (Oct. 22) 1935

- \*Investigations on Fingerprint as Constitutional Mark in Mental Diseases C. N. B. Møller —p. 1097  
\*Tumors in Kidney and Upper Urinary Tract (Hornified Squamous Epithelial Carcinoma) P. Freudenthal —p. 1112

**Fingerprint as Constitutional Mark in Mental Diseases**—Møller asserts that there is a relation, so far demonstrable only within larger groups, between the tendency to psychosis and the fingerprint. In his investigations attention has been paid only to the type of the pattern itself without regard to differences, such as the detailed form of the pattern, the number of lines, the fineness of the lines and the pattern combinations in the ten fingers. He thinks that, when these considerations are included, examination of the fingerprint may be of practical importance in the diagnosis and prognosis of mental diseases.

**Tumors in Kidney and Upper Urinary Tract (Hornified Squamous Epithelial Carcinoma)**—Freudenthal emphasizes the importance of (1) immediate thorough examination of every case of hematuria, (2) immediate cystoscopy and possibly ureteral catheterization before the end of hematuria, (3) pyelography on the slightest suspicion of change of form or of concrement formation in the upper urinary tract, (4) examination of the urine not only with reference to the regular form elements but also with regard to cholesterol scales and particles of tissue, (5) cystoscopic examination for hornification of the mucous membrane and (6) attempt at radical ureterotomy in cases of suspected pelvic or ureteral papilloma or pelvic or ureteral carcinoma.

78 1153-1180 (Nov. 5) 1935

- \*Experimental Investigations on Gastrogenic Anemias (in Dogs) III. Review of Personal Experimental Results up to the Present. S. Petri, A. S. Ohlsen and D. Bøggild —p. 1153  
Os Tibiale Externum E. Jensen —p. 1167  
\*Seasonal Variations in Incidence of Acute Leukosis J. Engelbreth-Holm —p. 1173

**Experimental Investigation of Gastrogenic Anemias**—The experiments of Petri and his associates in thirty-four dogs observed for one and a half years showed that three subchronic types of anemia could be produced: (1) a hypochromic condition with tendency to polycythemia after excision of the pylorus and the Brunner gland section in the duodenum; (2) a simple, grave anemia developing rapidly, in marked cases fatal, after excision of the entire stomach and the Brunner gland section; and (3) a simple, moderate stationary anemia after (a) excision of the fundus and (b) excision of the pylorus and the entire duodenum. None of the anemias showed hyperchromia, megalocytosis or leukopenia. The cases are believed to be gastrogenic and a part, at least, to be wholly or partly due to the absence of specific antianemic function. In the three types there was more or less marked (mainly unspecific) reaction to iron but no noteworthy reaction to either stomach or liver preparations. In one dog, with almost normal blood values one year after operation, there developed in the succeeding six months without general signs of illness a tolerably grave anemia with hyperplasia of the bone marrow, hyperchromia and leukopenia.

**Seasonal Variations in Acute Leukosis**—Engelbreth-Holm says that the susceptibility of grown chickens to leukosis varies strongly with the seasons, from about 40 per cent in October and November to about 80 per cent in April and May. Chicks are equally susceptible the year round. Analogously there are marked seasonal variations in the incidence of acute leukosis in man. Of ninety-five cases in Copenhagen, 65 per cent of which were in men, about twice as many occurred in the summer as in the winter. This does not include children under the age of 15. The difference in frequency in men and women seems to be especially pronounced in patients under 10 and more than 40. According to this material acute leukosis occurs most often in childhood and after 50.

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## THE AUTONOMIC NERVOUS SYSTEM

ESSENTIAL ANATOMY

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ST LOUIS

The autonomic nervous system consists of the ganglions that are anatomically and functionally connected with the central nervous system through the visceral efferent components of the cerebral and spinal nerves, and the nerves that arise in these ganglions (fig 1). Afferent cerebrospinal nerve components, both somatic and visceral, are functionally associated with the autonomic nerves. These however are not regarded as part of the autonomic nervous system since they are essential components of the cerebrospinal nerves. The peripheral visceral efferent conduction pathway consists of two neurons, a visceral efferent cerebrospinal nerve component and an autonomic neuron; the former may be designated the preganglionic, the latter the ganglionic neuron. On the basis of the distribution of the preganglionic neurons in the central nervous system the autonomic nervous system may be divided into (1) the cranial division which is connected with the brain stem through preganglionic components of the third, seventh, ninth, tenth and eleventh cranial nerves; (2) the thoracolumbar division which is connected with the spinal cord through preganglionic components of the thoracic and first and second lumbar spinal nerves; and (3) the sacral division, which is connected with the spinal cord through preganglionic components of the second, third and fourth sacral nerves.

The preganglionic components of the thoracic and upper lumbar nerves join the sympathetic trunk through the white communicating rami and terminate either in the ganglions of the sympathetic trunk or in sympathetic ganglions located in closer proximity to the abdominal viscera, viz. the prevertebral ganglions; those of the cranial and sacral nerves do not join the sympathetic trunk but run directly to the peripheral ganglions in which they terminate. The cranial and sacral divisions of the autonomic system therefore are comparable to each other but differ from the thoracolumbar division with respect to their preganglionic connections. They also differ from the thoracolumbar division in their reactions to certain drugs, e.g. epinephrine and atropine. On the basis of these anatomic and physiologic peculiarities the cranial and sacral divisions have been designated the cranio-sacral autonomic system and the thoracolumbar division the thoracolumbar autonomic system. The former constitutes the parasympathetic system, the latter the sympathetic

system, according to the current usage of these terms. The parasympathetic system comprises the cranial autonomic ganglions and all the autonomic ganglions associated with the thoracic, abdominal and pelvic viscera which are connected with the central nervous system through preganglionic components of the vagus and sacral nerves, and all the nerve fibers arising in these ganglions. The sympathetic system comprises the sympathetic trunk ganglions and the ganglions in the celiac and other abdominal and pelvic plexuses that are connected with the central nervous system through preganglionic components of the splanchnic nerves and all the nerve fibers arising in these ganglions. The preganglionic neurons that connect the ganglions in the walls of the enteric canal with the central nervous system are components of the vagus and sacral nerves. These ganglions consequently are related to the parasympathetic system. Many of their neurons however are not related to preganglionic neurons by direct synaptic connections but are components of local reflex arcs. The enteric plexuses differ in this respect from other divisions of the autonomic nervous system wherefore Langley designated them the enteric nervous system.

### THE SYMPATHETIC SYSTEM

The sympathetic system, consisting of the sympathetic trunks and the nerves arising from them and the sympathetic plexuses and nerves associated with the abdominal and pelvic viscera, is distributed widely throughout the body. Each sympathetic trunk, made up of a series of ganglions (vertebral ganglions) connected by longitudinal fibers, extends along the ventrolateral aspect of the vertebral column from the base of the skull to the coccyx. The cervical portion includes three ganglions, the superior, middle (sometimes absent) and inferior cervical sympathetic ganglions. Not infrequently the ganglion of the first thoracic segment is fused with the inferior cervical ganglion forming a stellate ganglion. Below this level the ganglions in general are arranged segmentally. All the ganglions of the sympathetic trunk are connected with the spinal cord through preganglionic spinal nerve components. Since the latter are limited to the thoracic and first and second lumbar nerves, most of those which terminate in the cervical ganglions must run upward in the sympathetic trunk and those which terminate in the ganglions below the second lumbar segment must traverse the sympathetic trunk downward. Many of the preganglionic components of the splanchnic nerves also traverse the sympathetic trunk through one or more segments. The interganglionic rami of the sympathetic trunk consist mainly of these preganglionic fibers and visceral afferent fibers. Most of the visceral afferent fibers that traverse the sympathetic trunks supply visceral organs. A limited number rejoin the spinal nerves for peripheral distribution.

The sympathetic trunk is connected with all the spinal nerves through communicating rami. Those connected with the thoracic and first and second lumbar nerves include both the visceral components of the nerves in question and the sympathetic fibers that join these nerves for peripheral distribution. Those connected with the remaining spinal nerves contain mainly sympathetic fibers. Most of the spinal nerve components which traverse the communicating rami are myelinated, most of the sympathetic fibers are either unmyelinated or only thinly myelinated. The spinal nerve components, consequently, constitute the white and the sympathetic fibers the gray communicating rami.

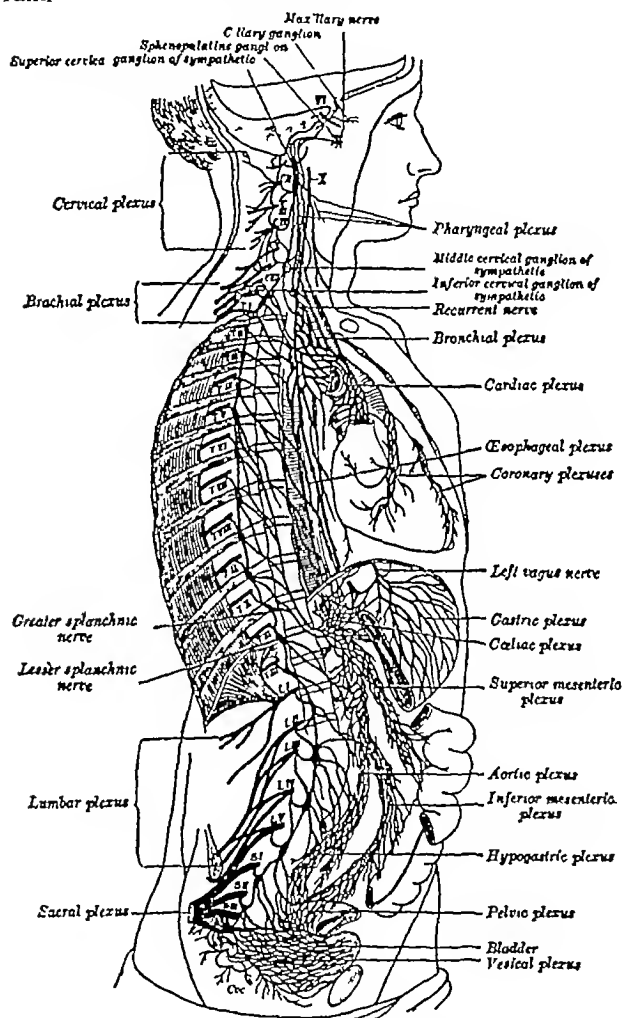


Fig. 1—Diagram illustrating the general distribution of the autonomic nervous system and the connections of the right sympathetic trunk with the thoracic, abdominal and pelvic plexuses. (Used as figure 140 page 245 in Kuntz Albert Text Book of Neuro-Anatomy Philadelphia Lea & Febiger Company 1931 by permission of Lea & Febiger Company publishers of Gray's Anatomy.)

The sympathetic fibers that join the spinal nerves are distributed to all the tissues requiring autonomic innervation within the areas of distribution of the respective nerves. The thoracic viscera are supplied with sympathetic fibers through nerves arising from the cervical and thoracic segments of the sympathetic trunks. The abdominal and pelvic viscera are supplied with sympathetic fibers through nerves arising from the ganglionated plexuses in the abdomen and pelvis, the ganglion cells of which are synaptically connected with preganglionic components of the thoracic and lumbar

splanchnic nerves. The cephalic area is supplied with sympathetic fibers, most of which arise in the superior cervical sympathetic ganglion and traverse the plexuses on the internal and external carotid arteries. Some fibers arising in the middle and inferior cervical ganglions also reach the cephalic area by way of the plexuses on the vertebral arteries.

#### THE PARASYMPATHETIC SYSTEM

The parasympathetic system includes the cephalic autonomic ganglions, with the nerves arising from them, and all the ganglions associated with the visceral organs, which are connected with the central nervous system through preganglionic components of the vagus and sacral nerves, and the nerves arising from these ganglions. The parasympathetic system, therefore, is less widely distributed in the body than the sympathetic system. Despite the reported observations of certain investigators, which have been interpreted as indicating the existence of parasympathetic fibers in the posterior spinal nerve roots, there are no data available proving the existence of parasympathetic fibers in the areas of distribution of the somatic ramus of the spinal nerves.

The preganglionic neurons that connect the cephalic parasympathetic ganglions with the brain stem are components of the third, seventh and ninth cranial nerves. Those which terminate in the ciliary ganglion constitute the visceral efferent group (Edinger-Westphal nucleus) associated with the nucleus of the oculomotor nerve. Their axons reach the ganglion by way of the oculomotor nerve. Those which terminate in the sphenopalatine ganglion are components of the facial nerve, the cell bodies of which are located in the superior salivatory nucleus. They traverse the greater superficial petrosal nerve and the nerve of the pterygoid canal through which they reach the ganglion. Those which terminate in the otic ganglion are components of the glossopharyngeal nerve, the cell bodies of which are located in the inferior salivatory nucleus. They reach the ganglion by way of the lesser superficial petrosal nerve. Those which terminate in the submaxillary ganglion also are components of the facial nerve, the cell bodies of which are located in the superior salivatory nucleus. They reach the ganglion by way of the chorda tympani and the lingual nerve. Preganglionic components of the glossopharyngeal nerve, the cell bodies of which are located in the inferior salivatory nucleus, also terminate in numerous small ganglions within the area of distribution of the glossopharyngeal nerve in the tongue.

The parasympathetic ganglions associated with the thoracic and abdominal viscera are connected with the brain stem through preganglionic components of the vagus nerves. Those associated with the pelvic viscera are connected with the spinal cord through preganglionic components of the sacral nerves. The fibers arising in these ganglions are distributed mainly to the viscera with which the respective ganglions are associated. The visceral organs, therefore, are innervated both through the parasympathetic and through the sympathetic nerves (fig. 2).

#### RATIO OF GANGLIONIC TO PREGANGLIONIC NEURONS

The neurons in the autonomic ganglions greatly exceed in numbers the preganglionic fibers, consequently, a single preganglionic fiber must effect synaptic connections with more than one autonomic neuron. By carefully executed actual counts, Billingsley and Ranson found the ratio of the neurons in the superior

cervical sympathetic ganglion to the preganglionic fibers that enter this ganglion to be approximately 32 to 1.<sup>1</sup> This finding warrants neither the conclusion that the same ratio obtains throughout the autonomic nervous system nor the conclusion that a single preganglionic fiber actually terminates in synaptic relationship to approximately thirty-two neurons in the superior cervical ganglion. Terminations of collaterals arising from the proximal portion of the axon of one neuron in synaptic relationship to adjacent neurons in the superior cervical ganglion have been described.<sup>2</sup> Such connections would make actual synaptic contact of preganglionic fibers with all the neurons in the ganglion unnecessary. On the other hand, some preganglionic fibers that terminate in this ganglion also effect synaptic connections through collaterals in the middle and inferior cervical ganglions. Comparable anatomic relationships probably obtain also in other autonomic ganglions. The ratio of the neurons in a given ganglion to the preganglionic fibers that enter it, consequently cannot be regarded as an exact criterion of the number of ganglion cells that may be activated by impulses conducted through single preganglionic fibers. The excess in the number of ganglionic neurons over the number of preganglionic fibers, nevertheless must be regarded as a factor in the relatively widespread responses to reflex stimulation of the autonomic nerves. The responses to parasympathetic stimulation in general are more definitely circumscribed than those to sympathetic stimulation. This does not warrant the conclusion that single preganglionic neurons effect synaptic connections with fewer ganglion cells in the parasympathetic ganglions than in the sympathetic but is to be explained on the basis of the relative stability of the respective chemical mediators liberated at the periphery by parasympathetic and sympathetic stimulation. The parasympathetic mediator (parasympathin) is effective only at the site of liberation, whereas the effectiveness of the sympathetic mediator (sympathin) is not limited to the site of liberation.

## CENTRAL AUTONOMIC CENTERS AND CONDUCTION PATHWAYS

In addition to the aggregates of visceral efferent neurons in the spinal cord and brain stem through which the autonomic ganglions are anatomically and functionally connected with the central nervous system there exist still other aggregates of neurons, particularly in the medulla oblongata and the diencephalon which are functionally related to the autonomic nervous system. For want of more appropriate designations these have been called central autonomic centers. They do not constitute circumscribed anatomic entities but have been delimited mainly by physiologic methods. The medulla oblongata contains at least three well known centers of this kind viz the vasomotor center located in the substantia reticularis grisea in the upper part of the medulla the center for the regulation of carbohydrate metabolism, located in the floor of the fourth ventricle just below the middle of the brachium pontis and the respiratory center located about the level of the inferior apex of the fourth ventricle. The diencephalic autonomic centers are located mainly in the hypothalamus and the walls of the third ventricle. The diencephalic autonomic centers as indicated by

the results of recent studies reported by Ranson and his associates<sup>3</sup> are essentially related to the sympathetic system. They involve the major portion of the hypothalamus and extend forward as far as the optic chiasm but not beyond this point. In the preoptic region just in front of the hypothalamus, according to their observations, there exists a center which is essentially related to the parasympathetic system. Stimulation of this center elicits parasympathetic responses particularly of the urinary bladder and the respiratory system.

The results of recent experimental studies, both physiologic and anatomic, support the assumption that the cerebral cortex also exerts an influence on visceral functions, but the mechanisms through which this influence is exerted as yet are not fully known. Mettler<sup>4</sup> has traced degenerated fibers of small caliber from the cortex into intimate relation to the peri-

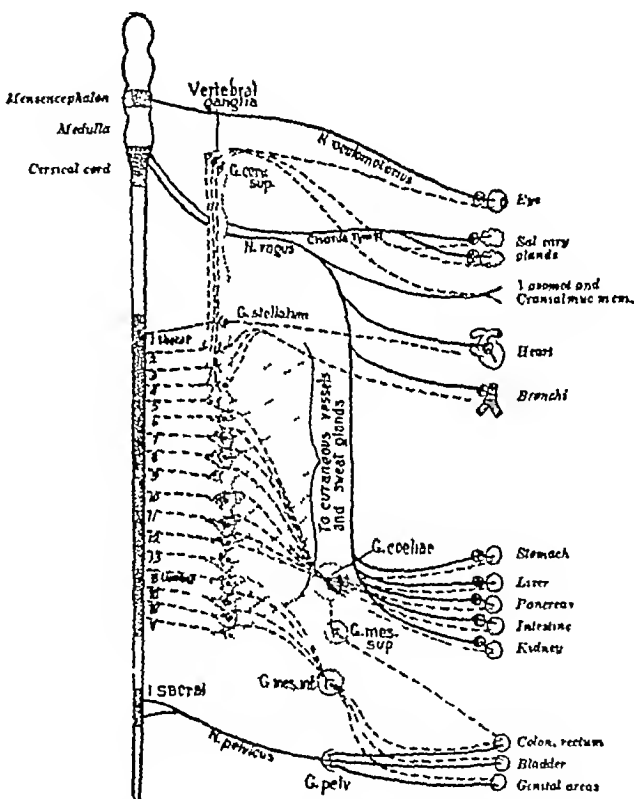


Fig. 2.—Diagram of the autonomic nervous system. The solid black lines represent the cranial and sacral divisions; the broken lines represent the thoracolumbar division. (Used as figure 139, page 241 in Kuntz' Text Book of Neuro-Anatomy modified from Meyer and Gotlieb.)

ventricular system in primates following cortical lesions in the premotor and prefrontal areas, and into the lateral hypothalamic nuclei, following cortical lesions in the parietal area. The Hoffis<sup>6</sup> also have traced degenerated fibers of cortical origin into the spinal cord following cortical lesions in the premotor area.

The descending conduction pathways through which impulses emanating from the higher autonomic centers reach the visceral efferent nuclei in the brain stem and spinal cord as yet are not fully known. Those arising in the diencephalon involve both the periventricular

1. Billingsley P R and Ranson S W On the Number of Nerve Cells in the Caudal Cervical Spinal Nerve Fibers in the Cervical End of the Truncus Sympatheticus in the Cat and on the Numerical Relations of Preganglionic and Postganglionic Neurons J Comp Neurol 20: 359 366, 1914

2. Lawentzow B J Zur Morphologie des Ganglion cervicale superius Anat Anz 62: 429 439 1924

3 Ran on S W Kabat II and Magoun II W Autonomic Responses to Electrical Stimulation of the Hypothalamus, Preoptic Region and Septum Arch Neurol & Psychiat 37:467-477 (Nov-1936)

4 Mettler F A Corticofugal Fiber Connections of Macaca Mulatta  
A summary of the Descending Pathways Anat Rev 61 34 (March  
25 supp) 1935

5 Hoff C. E., and Hoff H. F. Spinal Terminations of the Projections of the Motor Cortex of Primates. *Brain* 57: 454-474 (Dec.) 1934

system and fibers that descend by a more direct course. The latter lie widely scattered in the ventral and medial portions of the cross section in the lower levels of the diencephalon<sup>6</sup>. Some terminate in the reticular formation, others extend directly into the spinal cord<sup>7</sup>. Of those which terminate in the reticular formation, some effect connections with the reticulospinal tracts,<sup>8</sup> others

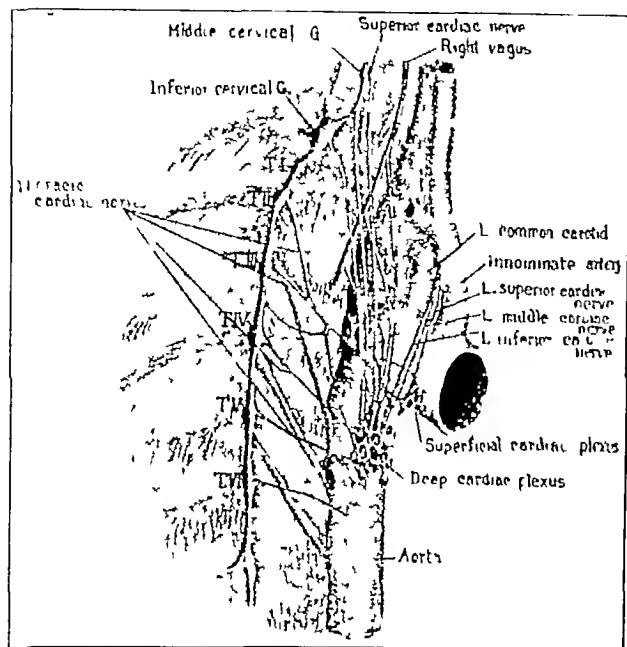


Fig. 3—Drawing from a dissection of a human cadaver illustrating the nerves entering the cardiac plexus from the right side. (Used as figure 1 in Kuntz and Morehouse<sup>11</sup>.)

with short neurons, the axons of which lie widely scattered in the tegmental portions of the mesencephalon and pons. The descending visceral conduction pathways in the spinal cord probably consist mainly of short neurons with frequent relays in the gray matter. Some of these neurons, furthermore, cross from one side to the other, consequently, visceral conduction takes place bilaterally, but more effectively on the ipsilateral than on the contralateral side.

#### VISCERAL REFLEX ARCS

The autonomic nervous system is essentially an efferent system, but both visceral and somatic afferent components of the cerebrospinal nerves effect reflex connections with the visceral efferent neurons in the spinal cord and brain stem. The afferent spinal nerve components that effect such connections in the spinal cord do not terminate in the visceral efferent (intermediolateral) cell column but in relation to neurons in the adjacent gray matter, which send their short axons into the visceral efferent column<sup>9</sup>. The afferent components of the cranial nerves that effect reflex connections with visceral efferent neurons in the brain stem likewise terminate in the respective afferent nuclei in relation to neurons the short axons of which terminate in the visceral efferent nuclei in question.

6 Isenschmid K. and Schnitzler W. Beitrag zur Lokalisation des Warmeregulation vorstehenden Zentralapparates in Zwischenhirn. Arch f exper Path u Pharmacol 76: 202-223, 1914.

7 Beattie J. Brow R. G. and Long, C. N. H. Physiological and Anatomical Evidence for the Existence of Nerve Tracts Connecting the Hypothalamus with Spinal Sympathetic Centers. Proc Roy Soc. s B 100: 253-275 (May 3) 1930.

8 Allen W. F. Formation Reticularis and Reticulospinal Tracts. Their Visceral Functions and Possible Relationship to Tonicity and Clonic Contractions. J Washington Acad Sc 22: 16-17, 1932.

9 Foerster O. Gagel O. and Sheehan, D. Veränderungen an den Enden im Rückenmark des Affen nach Hinterwurzel durchschneidung. Ztschr f Anat u Entwicklungsgesch 101: 553-565, 1933.

Most of the peripheral nerves, both visceral and somatic, include both cerebrospinal and autonomic nerve fibers. For example, the somatic rami of all the spinal nerves include sympathetic fibers, which join them directly from the sympathetic trunks by way of the gray communicating rami. The cerebrospinal nerve components included in the visceral nerves consist of preganglionic visceral efferent and visceral afferent neurons. The latter constitute the only conduction pathways through which impulses of visceral origin reach the central nervous system. They not only represent the afferent limbs of visceral reflex arcs but also effect central connections through which visceral impulses may be conducted to higher centers.

#### THE ANATOMIC BASIS OF SURGERY INVOLVING AUTONOMIC NERVES

Surgery involving autonomic nerves has become a recognized procedure in the treatment of various diseases, particularly angina pectoris, congenital megacolon and disorders in which circulatory disturbances in the extremities are factors, and in the relief of certain intractable pains. Such surgery implies exact knowledge of the anatomic relationships of the nerves in question. Failure to achieve the anticipated results of surgical intervention in certain cases, furthermore, has stimulated more exact anatomic studies. The results of only a few of these can be cited in the present connection.

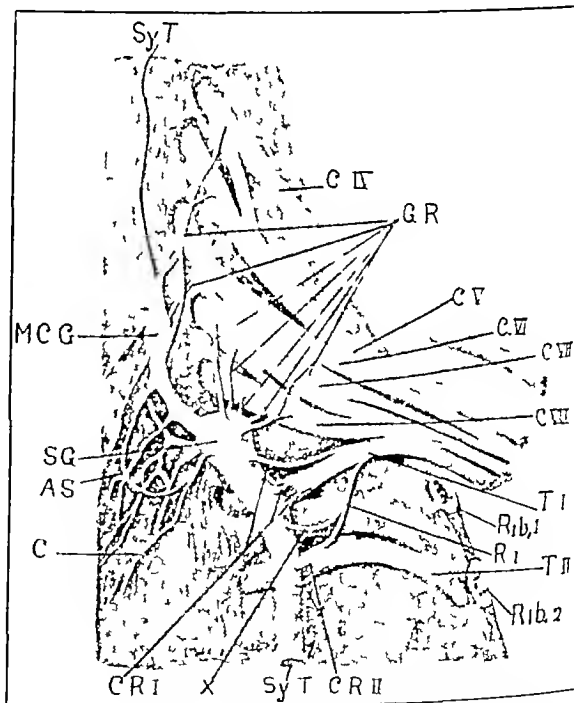


Fig. 4—Drawing from the cadaver to illustrate the inconstant intra-thoracic ramus from the second to the first thoracic nerve and the communicating rami joining the brachial plexus. A S, ansa subclavia C, the cardiac nerves C. IV to C. VIII, cervical nerves C. R. I, communicating rami to first thoracic nerve C. R. II, communicating rami to second thoracic nerve G. R, gray communicating rami to cervical sympathetic trunk X, inconstant intra-thoracic ramus from second to first thoracic ganglion C. G, stellate ganglion SyT, sympathetic trunk C. R. I, communicating rami joining the ramus from the second to the first thoracic nerve T. I, first thoracic nerve T. II, second thoracic nerve. (Used as figure 1 in Kuntz and Morehouse<sup>11</sup>.) Distribution of the Sympathetic Rami to the Brachial Plexus. Arch Surg 15: 871 (Dec) 1927.)

According to the current textbook accounts, the sympathetic innervation of the heart is derived from the superior, middle and inferior sympathetic cardiac



nerves, arising respectively from the superior, middle and inferior cervical sympathetic ganglions. Cardiac nerves arising from thoracic segments of the sympathetic trunks also have been described both in lower mammals<sup>10</sup> and in man.<sup>11</sup> These nerves vary in size and number but are constantly present in man. Nerves could be traced from the second and third thoracic ganglions of the sympathetic trunk directly into the cardiac plexus in all the cadavers used in our study. In some cases, small cardiac nerves also could be traced from the fourth and fifth thoracic segments of the sympathetic trunks (fig 3). The thoracic cardiac nerves, like the middle and inferior cervical, include both sympathetic and visceral afferent fibers. The superior cervical sympathetic cardiac nerve probably includes no

The bilateral distribution of the cardiac nerves is not symmetrical. The superficial cardiac plexus is made up mainly by the left superior sympathetic cardiac nerve and the inferior cervical cardiac branch of the left vagus. The deep cardiac plexus consists of two lateral parts joined together by numerous fiber bundles, but these two parts are unlike in composition and distribution. The right portion receives fibers by way of all the sympathetic cardiac nerves and all the vagus cardiac branches on the right side. The left portion receives fibers by way of the left middle and inferior cervical and thoracic sympathetic cardiac nerves and the superior cervical and thoracic cardiac branches of the left

The right, or anterior coronary plexus is derived mainly from the right portion of the deep cardiac plexus, the left, or posterior coronary plexus is derived mainly from the left portion of the deep cardiac plexus. Both coronary plexuses also receive fibers from the superficial cardiac plexus. According to Woollard,<sup>1</sup> the coronary arteries are supplied with both sympathetic and parasympathetic fibers, but their smaller branches and the arterioles are innervated mainly through parasympathetic fibers.

On the basis of these anatomic data it is evident that extirpation of only the superior cervical sympathetic ganglions effects the elimination of but a minor portion of the sympathetic innervation of the heart and leaves its afferent innervation intact. Extirpation of the entire cervical portions of the sympathetic trunks eliminates a greater portion of the sympathetic and a portion of the afferent cardiac nerves including the afferent of the sympathetic cardiac nerves associated with them would require extirpation of the inferior cervical and upper thoracic segments of the sympathetic

The sympathetic fibers that innervate the peripheral blood vessels are conveyed peripherad in the somatic run of the corresponding spinal nerves branches of which join the vessels at intervals along their courses. Elimination of the vasomotor innervation of an extremity, therefore requires interruption of all the sympathetic run that join the nerves which supply it.

This may be accomplished for the lower extremity by extirpation of the upper three or four lumbar segments of the sympathetic trunk. Complete sympathetic denervation of the upper extremity requires more extensive sympathetic section in some cases than in others. In some cases, no fibers emerging from the sympathetic trunk below the first thoracic segment join the nerves to the upper extremity. In a large percentage of cases, however, fibers that leave the sympathetic trunk in the second thoracic segment join the brachial plexus through an intrathoracic ramus of the second thoracic nerve, which joins the first proximal to the origin of the first intercostal nerve (fig 4). Complete sympathetic denervation of the upper extremity, in these cases by ganglionectomy requires extirpation of the

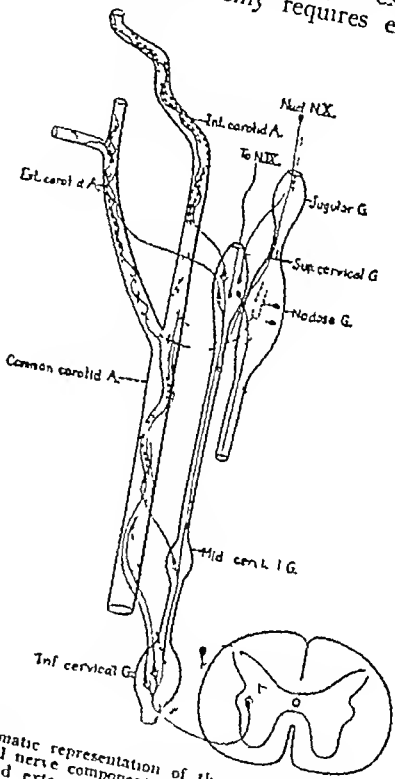


Fig. 5.—Diagrammatic representation of the anatomic relationships of the vagus and spinal nerve components which extend cephalad along the common internal and external carotid arteries (Used as figure 5 in Kuntz<sup>1</sup>).

inferior cervical ganglion and the first and second thoracic segments of the sympathetic trunk including the second thoracic ganglion.

Certain cases have been reported in which the operative procedure suggested has failed completely to eliminate the sympathetic innervation of the upper extremity.<sup>12</sup> The observations reported in these cases suggest that sympathetic fibers may enter the upper extremity from sources other than the cervical and first and second thoracic segments of the sympathetic trunk. In view of the developmental and anatomic relationship of the thoracic and cervical portions of the sympathetic trunks, it has seemed more probable that such a source might be found below than above the level of the second thoracic segment. In the absence of an intrathoracic pathway through which sympathetic fibers arising below the second thoracic segment could enter the brachial plexus following section of the sym-

<sup>10</sup> Permay, F. Anatomische Untersuchungen über die Herznerven bei den höheren Säugetieren und beim Menschen. Z. chr. f. d. ges. Anat. 1 (1872) 1924. Cannon, W. B., Lewis, J. T. and Britton, S. W. A Lasting Preparation of the Denervated Heart for Detecting Internal Secretion with Evidence for Accessory Accelerator Fibers from the Thoracic Sympathetic Chain. Am. J. Physiol. 7: 32, 15, (July) 1916.  
<sup>11</sup> Jones, C. D., Franchescu, M. and Teitel, V. B. Untersuchungen bei Säugetieren und beim Menschen über die aus dem Brustgrenz tring unterhalb des Cangelum entspringenden Herznerven. Klin. Wchnsch. 1919, 91: 912. (Mar. 20) 1928. Kuntz, Albert and Morehouse, Albert. Thoracic Sympathetic Cardiac Nerves in Man. Their Relation to Cervical Sympathetic Ganglionectomy. Arch. Surg. 20: 13 (April) 1930.  
<sup>12</sup> Woollard, H. H. The Innervation of the Heart. J. Anat. 60: 145 3 (July) 1926.

<sup>13</sup> Levy, Simpson, S., Brown, C. F. and Adson, A. W. Observations on the Etiologic Mechanism in Raynaud's Disease. Proc. Staff Meet. Mayo Clin. 295: 298 (Oct. 13) 1930. Telford, E. D. Sympathectomy. A Review of One Hundred Operations. Lancet 1: 446 (March 11) 1934.

pathetic trunk below the second thoracic ganglion, we have sought such a pathway within the vertebral canal.

The gray communicating rami send small recurrent branches into the intervertebral foramina, which, according to the current textbook accounts, terminate in the walls of the blood vessels in the vertebral canal and the membranes enveloping the spinal nerve roots. The segmental arteries and veins that traverse the intervertebral foramina anastomose freely within the vertebral canal and form somewhat irregular longitudinal channels. If sympathetic fibers ascend in the vertebral canal, it might be assumed that they follow these vascular channels. Such fibers have been demonstrated along these vascular channels in human cadavers, but the ultimate connections of the ascending fibers with the brachial plexus could not be demonstrated in human material by the available methods of study. In experimental animals (cats) I have been able to demonstrate the existence of sympathetic fibers which arise below the level of the second thoracic segment, ascend in the vertebral canal and join the seventh and eighth cervical and first thoracic nerves by way of the corresponding intervertebral foramina, following extirpation of the inferior cervical and first and second thoracic segments of the sympathetic trunk. Such fibers could not be demonstrated in all the animals studied, and there is no reason to assume that they reach the distal parts of the upper extremity in all the cases in which they are present. These results in experimental animals, however, suggest a plausible explanation of the existence of some functional sympathetic fibers in the upper extremity in certain clinical cases following extirpation of the inferior cervical and first and second thoracic segments of the sympathetic trunk.

In view of the reported results of sympathectomy carried out for the relief of pain, particularly in the lower part of the abdomen and pelvis and in the face, exact knowledge of the anatomic relationships of the afferent spinal nerve components associated with the sympathetic nerves in question is important. All the nerves extending from the sympathetic trunks to the thoracic, abdominal and pelvic viscera, except the superior cervical sympathetic cardiac nerves, comprise visceral afferent as well as visceral efferent or sympathetic fibers. These afferent fibers also traverse the terminal plexuses. The major portion of the afferent supply to the pelvic viscera, moreover, traverses the hypogastric plexuses, and the fibers in question enter the spinal cord in the upper lumbar or higher segments. Extirpation of any portion of the sympathetic trunk from the lower cervical segments downward, section of any of the thoracic or abdominal rami arising from the sympathetic trunk, or section of the hypogastric plexuses, consequently, interrupts afferent as well as efferent conduction pathways. Afferent spinal nerve components probably do not traverse the upper cervical portion of the sympathetic trunk and the superior cervical ganglion. Afferent components of the upper thoracic nerves which traverse the inferior cervical ganglion, however, join the plexus on the common carotid artery and ascend into the cephalic area by way of the plexuses on the internal and external carotid arteries (fig 5).<sup>14</sup> Extirpation of the inferior cervical ganglion consequently, interrupts afferent spinal nerve components the terminal distribution of which is in the cephalic area.

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<sup>14</sup> Kuntz Albert. Nerve Fibers of Spinal and Vagus Origin Associated with the Cephalic Sympathetic Nerves. *Ann Otol Rhin & Laryng* 43: 50-67 (March) 1934.

## THE RÔLE OF THE AUTONOMIC NERVOUS SYSTEM IN THE PRODUCTION OF PAIN

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AND  
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A form of pain originating from deeper structure in the extremities has been thought by Foerster<sup>1</sup> to be conveyed through the periarterial plexuses into the sympathetic chain. He believes that in the upper extremities some of the afferent fibers are sympathetic and in part reach the sympathetic chain through the rami communicantes of the spinal nerves from the arms and partly through the vascular plexus of the subclavian artery and its branches. In either case they reach the sympathetic ganglions and from there travel through the first to the fifth thoracic posterior roots into the spinal cord. In the lower extremity he believes that afferent impulses pass through the rami communicantes of the lumbosacral nerves or by the perarterial network of the tibial, popliteal, femoral and iliac arteries and the aorta, to end directly in the sympathetic ganglionic chain. From there they enter the spinal cord by way of the thoracic posterior roots.

Failure of section of the posterior root of the fifth nerve to relieve certain so-called atypical facial neuralgias likewise has called attention to the possible role played by the autonomic nervous system in the production of pain. Attempts to relieve such pain by excision and section of various parts of the autonomic supply to the head has led to the assumption that painful impulses travel along the autonomic nervous system in these cases.

It is in relation to visceral pain, however, that the autonomic system has been held to have the closest relation. This pain has been thought to be of two types: true splanchnic or visceral pain,<sup>2</sup> and referred pain.<sup>3</sup> Although recent workers in general believe in the existence of these two types of visceral pain, there is some difference of opinion as to whether the pain is referred from the viscera or, as stated by Morley,<sup>4</sup> from the peritoneum.

The role of the autonomic nervous system in the production of pain has been studied in relation to afferent fibers either traveling along with it or constituting a part of it. We propose to show that, so far as is proved, it is only the efferent fibers of the autonomic system itself which are concerned with the production of pain and that such afferent fibers as travel along with it belong to the ordinary spinal sensory system.

In relation to pain from the extremities, we<sup>5</sup> have previously shown that complete deafferentation of an extremity in man destroyed all forms of sensibility and that complete denervation of the peripheral nerves of

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<sup>1</sup> Foerster Otto. Altenburger H. and Kroll F. W. Ueber die Beziehungen des vegetativen Nervensystems zur Sensibilität, *Zschr f d. ges. Neurol u. Psychiat* 121: 140, 1929.  
<sup>2</sup> Ross J. On the Segmental Distribution of Sensory Disorders. *Brain* 10: 333, 1888. Head Henry. On Disturbances of Sensation with Especial Reference to the Pain of Visceral Disease. *Brain* 16: 1, 1893.  
<sup>3</sup> Lange, C. Nogle bemærkninger om neuralgier og deres behandling. *Hospitaltid* 2: 641, 1875. Ross J. Head J. Mackenzie James. *Symptoms and Their Interpretation*. London, Shaw & Sons, 1920.  
<sup>4</sup> Morley John. *Abdominal Pain*. New York, William Wood & Co., 1931.  
<sup>5</sup> Davis Loyal and Pollock L. J. The Peripheral Pathway for Painful Sensations. *Arch Neurol & Psychiat* 24: 883 (Nov.) 1930.

an extremity in a decerebrate cat completely abolished all reflexes ordinarily observed as resulting from painful stimuli. We have also shown that in other animals complete severance of all peripheral nerves abolishes all evidence of pain from stimulation of skin, subcutaneous tissue, vessels, bone and periosteum. Our conclusion that there was no evidence for the existence of a sensory pathway through the autonomic system has received recent confirmation by the work of Moore and Singleton.<sup>6</sup> These authors were unable to produce pain by intra-arterial injections of an irritant after the extremities of animals were completely deprived of their peripheral nerve supply or after section of the appropriate posterior roots. They were unable to stop pain by removal of the autonomic supply to the extremity. The fibers carrying the painful impulse, they believe, pass centrally in the peripheral branches of the spinal nerves and enter the spinal cord by way of the posterior roots. It would seem, as Kuntz<sup>7</sup> has said that "the data available at present do not prove the existence of any autonomic neurons which are incorporated in conduction pathways through which afferent impulses are conveyed into the central nervous system."

As is well known, a type of referred visceral pain can be stopped by anesthetizing the area of skin into which the pain is referred. When in some former experiments we were unable to stop pain produced by distention of the gallbladder by severing the intercostal nerves, we felt that this pointed to the existence of both true visceral, or splanchnic, pain and a referred pain. In these experiments we were able to confirm the previous work of Davis<sup>8</sup> and of Ivy and Schrager,<sup>9</sup> which showed that these painful impulses from the gallbladder traveled along with the right splanchnic nerve into the spinal cord by way of the posterior roots. Later, Stone was unable to stop such pain by section of the appropriate anterior roots. So far as the gallbladder is concerned, all forms of pain, referred or splanchnic, are stopped by severing the right splanchnic nerve. Moore and Singleton have shown that pain arising from the injection of irritants into the hepatic, splenic and superior mesenteric arteries is carried by way of either the major splanchnic nerves, or the sympathetic chain, and enter the spinal cord. Although it may be demonstrated that afferent painful impulses from the viscera are carried along with the autonomic nervous system, we have no proof that the impulses are actually carried over autonomic neurons.

In considering painful impulses from the head and diaphragm, an entirely different situation is met. When one stimulates the superior cervical ganglion pain is felt in the distribution of the trigeminal nerve.<sup>10</sup> The autonomic supply to the structures of the face and head are considered as consisting of purely efferent fibers.<sup>11</sup>

We<sup>12</sup> have shown that section neither of the first eleven anterior roots nor of the first twelve to fifteen posterior roots prevented pain from stimulation of the superior cervical ganglion. When the cervical posterior roots were severed to interrupt any pain arising from impulses carried by nervi nervorum or nerves to structures surrounding the ganglion and, simultaneously, the posterior root of the trigeminal nerve was sectioned, all pain ceased. At that time we pointed out that in the production of pain the autonomic system acted through an efferent impulse which produced some effect on the skin and other structures the exact nature of which we were unable to state, and that from these structures, because of stimulation by a possible hormone or change in vascular supply, an impulse traveled over the ordinary sensory pathway of the trigeminal nerve.

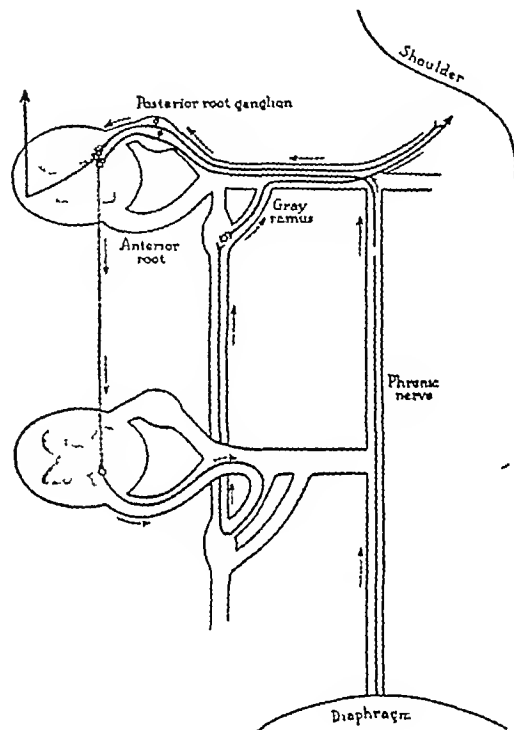


Diagram illustrating pathway of painful impulses produced by stimulation of the diaphragm

Recently we<sup>12</sup> have reported our results on a study of the pain produced by stimulation of the diaphragm with a faradic current. As has been pointed out by Capps and Coleman,<sup>14</sup> when the central part of the peritoneal surface of the diaphragm is stimulated, a pain is produced which is felt along the trapezius ridge. Such pain called shoulder tip pain and due to disease of the viscera has been stopped by the production of cutaneous analgesia of this area by many observers.<sup>15</sup> Woollard, Roberts and Carmichael<sup>16</sup> were unable to do this but we recently had the opportunity to observe a number of patients in whom a phrenic eversion was being performed. After exposure of the phrenic nerve in the neck it was stimulated by

6 Moore R M and Singleton A O Jr. Studies on Pain Sensitivity of Arteries. Peripheral Paths of Afferent Neurons from Arteries of Extremities and of Abdominal Viscera. *Am J Physiol* 104: 267 (May) 1933.

7 Kuntz, Albert. *Textbook on Neuro Anatomy*. Philadelphia: Lea & Febiger, 1931.

8 Davis, Loyal Hart J T, and Crain R C. Pathway for Visceral Afferent Impulses Within Spinal Cord. Experimental Dilatation of Biliary Ducts. *Surg Gynec & Obst* 48: 647 (May) 1929.

9 Schrager, L and Ivy A C. Symptoms Produced by Distention of Gallbladder and Biliary Ducts. *Surg Gynec & Obst* 47: 1 (July) 1928.

10 Frazier C H and Russell E C. Neuralgia of the Face. An Analysis of 54 Cases with Relation to Pain and Other Sensory Phenomena Before and After Operation. *Arch Neurol & Psychiat* 11: 45 (May) 1924.

11 Langer, J. Observations on the Medullated Fibers of the Sympathetic System and Chiefly on Those of the Gray Rami Communicantes. *J Physiol* 20: 55, 1896.

12 Davis, Loyal and Pollock, L J. The Role of the Sympathetic Nervous System in the Production of Pain in the Head. *Arch Neurol & Psychiat* 27: 282 (Feb) 1932.

13 Pollock L J and Davis Loyal. Visceral and Referred Pain to be published.

14 Capps J A and Coleman G H. *Pain in the Pleura Pericardium and Peritoneum*. New York, Macmillan Company, 1932.

15 Wei A S and Davis Loyal. The Significance of the Afferent Impulses from the Skin in the Mechanism of Visceral Pain. *Am J Sci* 17: 517 (Oct.) 1928.

16 Woollard H J, Roberts J E H and Carmichael E A. An Inquiry into Referred Pain. *Lancet* 1: 337 (Feb 13) 1932.

a faradic current. When pain was produced, it was always referred to the trapezius ridge or supra-clavicular region. When this cutaneous area was rendered analgesic, stimulation of the nerve no longer produced pain. In our report we described the effect of severing and removing various parts of the nervous system on the results of stimulating the central part of the peritoneal diaphragm. We found that to prevent the effect of an overflow of current to the periphery of the diaphragm it was necessary either to sever the spinal cord below the level of the third thoracic segment or to sever the thoracic posterior roots. This did not prevent pain from stimulation of the diaphragm. After one or the other of these operations had been performed and both phrenic nerves were severed, the pain could no longer be produced. It was also prevented by severing the cervical posterior roots, though the phrenic nerves were left intact. When the spinal cord was transected at the level of the seventh cervical segment the pain was stopped and when the second thoracic segment of the cord was destroyed it could not be produced. Pain was also stopped by severing the eighth cervical and first second third and fourth anterior roots or by removing both cervical sympathetic chains.

It may be seen from these experiments that painful impulses from the diaphragm travel over the phrenic nerves into the spinal cord by the cervical posterior roots and descend probably by short pathways, to the level of the second thoracic segment. At that level a synapse with the cells in the anterolateral column occurs and the impulses pass out through the cervical eighth and thoracic first, second third and fourth anterior roots to the cervical sympathetic chain. Over efferent fibers the impulses are carried to the skin and other structures as shown in the accompanying illustration. Some physiologic process then occurs the nature of which is unknown. From the periphery the impulses then travel over the ordinary spinal sensory nerves into the spinal cord by the posterior roots. When the area of skin into which the pain is referred is rendered analgesic although all other structures are intact, no pain is produced by experimental stimulation of the phrenic nerve or by disease of the diaphragm. If one considers the diaphragm as a visceral organ, it is obvious that the pain is not the result of a peritoneal stimulation, since it occurs after section of the cord or after section of the thoracic posterior roots.

Recently we have observed some animals decerebrated by the anemic method. When the gallbladder of these animals was distended, marked swishing of the tail running movements and torsion of the trunk resulted. When the splanchnic nerves were severed no reflex activity was observed, but when all the intercostal nerves were severed and the splanchnic nerves left intact the same reflexes were seen. We believe there is no proof that viscerosensory and visceromotor reflexes should be considered as nothing more than peritoneosensory and peritoneomotor reflexes although there is no reason to believe that both types of reflexes should not exist.

As in the case of pain in the face so in the pain referred from stimulation of the diaphragm it is seen that the only proved contribution of the autonomic system to the production of pain is in its efferent arc.

The former theories of the mechanism of referred pain were fairly similar. Ross held that after reaching the gray matter of the posterior horns from the splanchnic nerves, a diffusion of the stimulus to the roots of the corresponding somatic nerves caused an

associated pain in the territory of distribution of these nerves. Lange described it as a radiation along sensory nerves. Mackenzie believed that an irritable focus was set up by radiation which lowered the threshold and thus produced cutaneous hyperalgesia. Head thought that because the internal organs are devoid of epicritic sensibility they react much as does the skin when epicritic sensibility is absent and protopathic sensibility is present. When a painful stimulus is applied to a part of low sensibility in close central connection with a part of higher sensibility, the pain produced is felt in the part of higher sensibility rather than in the part of lower sensibility to which the stimulus was actually applied. Lemaire<sup>17</sup> placed the radiation in the posterior root ganglion instead of within the spinal cord.

With the discovery by Weiss and Davis and by Lemaire and others that cutaneous analgesia stops pain due to visceral disease referred to that area of skin, other theories have been developed. Verger<sup>18</sup> traced the impulses by way of sympathetic afferents through the posterior roots to the anterolateral column, then by sympathetic efferent fibers running antidromically in the posterior roots to the skin. A sensory impulse from the skin is then conducted by way of the sensory cerebrospinal system. A somewhat sounder theory is proposed by Spamen and Lunedei<sup>19</sup> who state that the visceral impulses that reach the lateral columns of the cord by afferent pathways stimulate centrifugal unmyelinated fibers, which terminate in the sensory corpuscles. Physicochemical changes are thus produced which stimulate the sensory organs from which impulses travel over the cerebrospinal nerves. Unaware of Spamen's and Lunedei's theory, we reconstructed such a pathway as a result of our experiments on stimulation of the superior cervical ganglion. Our recent experiments on the diaphragm, in our opinion, add confirmative evidence of such a pathway. This pathway has a sound anatomic basis and does not call into play any hypothetic radiation irritable foci, lowering of threshold or diffusion.

There is no anatomic proof of the existence of an autonomic sensory neuron. There is, however, anatomic and physiologic evidence of a pure autonomic motor neuron as exemplified in the cervical sympathetic chain. The only connection of the autonomic system with the spinal cord is by means of a preganglionic fiber. Such afferent fibers as are found in the autonomic system seem to be connected with the spinal cord, in a manner similar to the connections of a peripheral nerve.

The only proved contribution of the autonomic nervous system to pain is in relation to referred pain, in the production of which the efferent, not the afferent, fibers are utilized. In relation both to pain in the face and shoulder tip pain referred from the diaphragm there is physiologic proof to support this theory. In relation to the former we are dealing only with autonomic efferent fibers in the cervical sympathetic chain. In the latter severance of the appropriate purely motor anterior roots which contribute to the cervical sympathetic chain prevented diaphragmatic pain.

The impulses of referred pain travel from the viscera along with either autonomic or spinal sensory fibers to the spinal cord by way of the posterior roots. After passing over a synapse with cells in the anterolateral

17 Lemaire A. La perception des douleurs viscérales. *Rev. med. de Louvain* 1926 No. 6 p. 81.

18 Verger H. Sur une modification du schéma de Lemaire pour la conception physiologique de réflexe viscéro-sensitif de Mackenzie. *Gaz. d. sc. med.* 43 419, 1927.

19 Spamen P. and Lunedei A. Sui riflessi viscerosensitivi e del meccanismo di produzione del dolore nelle affezioni dei visceri e dell'acrosi. *Riv. di clin. med.* 28 758 (Oct. 15) 1927.

column, the impulses travel over preganglionic efferent fibers to the autonomic ganglions. A postganglionic fiber then carries the impulses to the skin, where the sensory end organs are stimulated. Thus, an ordinary somatic painful impulse is produced which travels over the spinal sensory nerves, enters the spinal cord by way of the posterior roots, and ascends in the lateral spinothalamic tract to a cortical level.

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## CLINICAL TESTS OF FUNCTION OF THE AUTONOMIC NERVOUS SYSTEM

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Physiologists have demonstrated that a large percentage of smooth muscle and glandular tissues, as well as some of the other tissues of the body, have a dual nerve supply. There are fibers from both the parasympathetic (vagus) and the sympathetic system. It is generally accepted that the impulses which reach these tissues through one set of nerves produce an antagonistic reaction as compared to the effects produced by the impulses of the opposite set of nerves. This opposition of two types of reactions produced by two sets of nerves has therefore led to the attempt to apply this information to clinical problems. There have been much clinical theorizing and some serious attempts to establish a physiologic basis for the explanation of functional disorders. The conception of vagotonia and sympathicotonia<sup>1</sup> was based on the premise that in health there was an equilibrium or balance of the sympathetic and parasympathetic division of the vegetative and autonomic nervous system.

Functional disorders were expressed by disturbance in the balanced control. With preponderance of tonus in the vagus system symptoms referable to increased sensitivity of this autonomic division existed and were designated as a state of vagotonia. Increased tonus in the sympathetic division was known as sympathicotonia. The imbalance of two nervous components was tested with pharmacologic agents to determine the sensitivity of the two systems. Epinephrine and ergotamine were employed to determine the sensitivity of the sympathetic system. Atropine, muscarine, pilocarpine and physostigmine determined reactivity of the parasympathetic system. The vagus-stimulating hormone acetylcholine had not yet been identified.

Time has demonstrated that symptoms of functional disorders cannot be clearly differentiated on the basis of vagus sympathetic imbalance. Usually both divisions are involved. Testing of clinical subjects with drugs is not satisfactory and conclusions based on this procedure are faulty. Another important factor in the inadequacy of the clinical conception of Eppinger and Hess<sup>2</sup> was the failure to utilize quantitative methods for measuring the response.

These deficiencies explain the weakness of this conception in the elucidation of clinical problems. To these workers however much credit is due for emphasizing the importance of dysfunctions of the autonomic ner-

vous system in functional disorders. Peterson and others<sup>3</sup> have suggested the terms parasympathetic status and sympathetic status. The former they believe is associated with dilatation of capillaries, activity of tissues, and "dissimulation of calcium and hydration." Sympathetic status is concerned with rest of tissues, vasoconstriction, accumulation of calcium, and dehydration. Kuntz<sup>4</sup> has discussed the conception of functional antagonism of sympathetic and parasympathetic nerves and concluded that, in the light of our knowledge of blood vessel innervation, some other basis must be advanced. Mutual synergism, rather than antagonism, of these components is present in their functional activity.

### NEWER APPROACHES

Methods have been evolved which attempt to measure reactivity of physiologic units of the autonomic nervous system. These methods have been based on two premises: first, the response of the sympathetic mechanism to stress and second, the measurement of responses with quantitative methods. Measurements of the temperature of the skin and determination of the heat eliminated by the extremities determine indirectly variations in vasomotor function. The presence or absence of sweating is determined by a colorimetric method.<sup>5</sup> The response of blood pressure to a standard form of stimulation and to passive and active changes in posture, and the responses of the cardiac rate to standard exertion tests have been utilized. The fundamental basis of this type of clinical investigation is based on measuring the response of the sympathetic mechanism to stress. The adequacy or range of these responses is determined for normal subjects. Variation from the normal response, as measured in quantitative units, establishes the pathologic range.

### METHODS

*Measurement of Vasoconstriction*—Several methods are useful for measuring grades of vasoconstriction and available vasodilatation in extremities. The first test employed to measure the range of vasodilatation utilized the dilating effect of fever. One of the most important functions of the vasomotor mechanism is the restriction or acceleration of elimination of heat from the surface of the body. During the period of systemic fever and under resting or basal conditions in a room with a temperature which is maintained between 24 and 26 C, the temperatures of the digits of the hands and feet of the subject are taken every thirty minutes. Three values are obtained: (1) the range of vasodilatation, that is the increase in the surface temperature from the basal to the maximal level, (2) the maximal level of dilatation that is the highest surface temperature attained in the digits, and (3) the vasomotor index, which is the increase in surface temperature divided by the oral temperature. This gives the amount of surface dilatation obtained for each degree of fever.<sup>6</sup> Immersion of the hands or feet in hot water (45 C) for from thirty minutes to an hour affects vasodilatation of the unimmersed extremities by probable stimulation of the vasodilator nerves.<sup>7</sup> The coefficient of vasodilatation is

<sup>2</sup> Peterson, W. F., Iversen, S. A. and Hughes, T. P. Studies in Endothelial Permeability. The Effect of Epinephrine on Endothelial Permeability. *J. Immunol.* 5: 323-348 (Sept.) 1923.

<sup>3</sup> Kuntz, Albert. *Autonomic Nervous System*, ed. 2. Philadelphia 1914.

<sup>4</sup> Path, Grace M. and Brown, G. F. Unpublished data.

<sup>5</sup> Brown, C. E. The Treatment of Peripheral Vascular Disturbances. *The Extremities*. *J. A. M. A.* 87: 379-383 (Aug. 7) 1926.

<sup>6</sup> Landis, F. M. and Gilpin, J. H. Jr. A Simple Method of Measuring Vasodilatation in the Lower Extremities with Reference to Its Usefulness in Studies of Peripheral Vascular Disease. *Arch. Int. Med.* 72: 25-28 (Nov.) 1915.

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<sup>1</sup> Eppinger Hans and Hess, Leo. Zur Pathologie des vegetativen Nervensystems. *Z. f. klin. Med.* 67: 345-351 (1910). GS 20: 20 (1910).



less than that obtained with fever or anesthesia. Other methods for measuring vasodilatation are based on procedures that temporarily interrupt vasomotor action. Spinal anesthesia produces complete dilatation of the vessels of the lower extremities by temporary blocking of the vasomotor nerves. General anesthesia produces complete generalized vasodilatation.<sup>7</sup> Anesthesia of the mixed nerve trunks affects regional vasodilatation.<sup>8</sup>

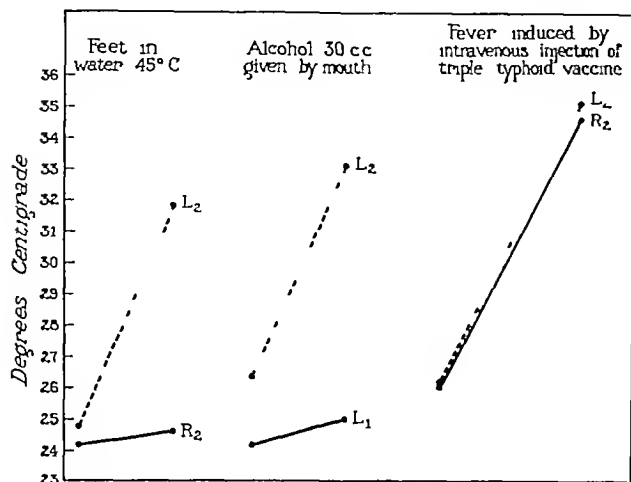


Fig 1—Effect of vasodilating agents on the temperature of the extremity in a case of Raynaud's disease. Intensity of the spasm was high and vasodilatation was incomplete with heat and alcohol but complete with fever.

Various vasodilating drugs have been studied in order to determine their vasodilating efficiency. Alcohol,<sup>9</sup> mechoholin<sup>10</sup> and theobromine,<sup>11</sup> taken by mouth, induce variable degrees of peripheral vasodilatation. Their relative vasodilating efficiency is in the order named. Papaverine administered intravenously has a definite peripheral vasodilating action. Because of individual susceptibility, the effect of these drugs is not uniform. Intensity of vasoconstriction is variable in the presence of different diseases, and complete vasodilatation may not be induced with drugs or with high environmental temperatures (fig 1).

**Methods for Studying Function of Sweating**—Quantitative measurement of degrees of sweating has not been entirely satisfactory. Physical methods can be used for measuring the electrical potential of the skin, which determines the degree of moisture present. The method has not yet been developed to a point at which it is entirely satisfactory for clinical use. A method that is less accurate than the former method depends on the application of alcoholic solution of cobalt blue to the skin. The patient is placed in a heat cabinet, which has an environmental temperature of 130° F (54.4° C), until sweating is induced. In the presence of moisture, the blue stain is changed to varying degrees of red<sup>4</sup> (fig 2). Imperceptible degrees of sweating can be detected with this procedure.

7 Scott, W. J. M. and Morton, J. J. Obliteration of Vasoconstrictor Gradient in the Extremities Under Nitrous Oxide-Oxygen Ether and Trichloromethyl Alcohol Anesthetics. *Proc. Soc. Exper. Biol. & Med.* 27: 945-949 (June) 1930.

8 White, J. C. Diagnostic Blocking of Sympathetic Nerves to Extremities with Procaine. A Test to Evaluate the Benefit of Sympathetic Ganglionectomy. *J. A. M. A.* 94: 1382-1388 (May 3) 1930.

9 Cook, E. A. and Brown, G. E. The Vasodilating Effects of Ethyl Alcohol on the Peripheral Arteries. *Proc. Staff Meet., Mayo Clin.* 7: 449-452 (Aug. 3) 1932.

10 Starr, Isaac Jr. Acetyl B Methylcholin. Its Action on Paroxysmal Tachycardia and Peripheral Vascular Disease with a Discussion of Its Action in Other Conditions. *Am. J. M. Sc.* 186: 330-345 (Sept.) 1933.

11 Scopham, G. W. Some Clinical Observations on the Use of Theobromine in Peripheral Vascular Disease. *J. Clin. Investigation* 10: 165 (April) 1931.

**Testing the Vasomotor Mechanism by Measuring the Reactability of the Systemic Blood Pressure**<sup>1</sup>—The cold pressor test is carried out as follows. The patient rests for from twenty to thirty minutes, or until the basal blood pressure is obtained. One hand is immersed above the wrist in ice water (4° C) for one minute. Readings of the blood pressure in the opposite arm are taken every fifteen seconds. A sharp increase in both the systolic and the diastolic blood pressure occurs. The hand is removed from the water. The blood pressure returns to its basal level within two minutes in cases in which the level of blood pressure is normal. If the subject has hypertension, the return to the basal level is delayed for a duration longer than two minutes (fig 3).

The cold pressor test measures the reactivity of the vasomotor mechanism of the individual. This response is quite uniform for the individual. Repetition of this test carried out from day to day shows an average difference of less than 10 per cent. For "normal" subjects the mean increase is approximately 12 mm of mercury for the systolic and 10 mm of mercury for the diastolic pressure. The upper range of normal response has been placed tentatively at 22 mm of mercury for the systolic and 18 mm of mercury for diastolic pressure. Responses in the upper normal range may be found in hyperthyroidism, neurocirculatory asthenia and Raynaud's disease. Hypertensive subjects and those who have a family history of hypertension show an increase from three to ten times that shown by normal subjects. In no other disease has a maintained hyperreaction been found. Other tests for measuring reactivity of the blood pressure are the inhalation of 10 per cent concentration of carbon dioxide in oxygen. The pressor test measures the response, or rise in blood pressure, and the maximal point, a value that has been designated as the "ceilinging."

#### Tests for Measuring the Effect of Posture on the Blood Pressure

One procedure is carried out by placing the subject on a table that can be tilted at different angles without exertion on the part of the patient. The blood pressure and pulse rates are taken while the patient is in the horizontal, upright and intermediate positions. This is called the "passive postural test." The "active postural test" is carried out by taking the blood pressure and pulse while the patient is in the reclining and standing positions.

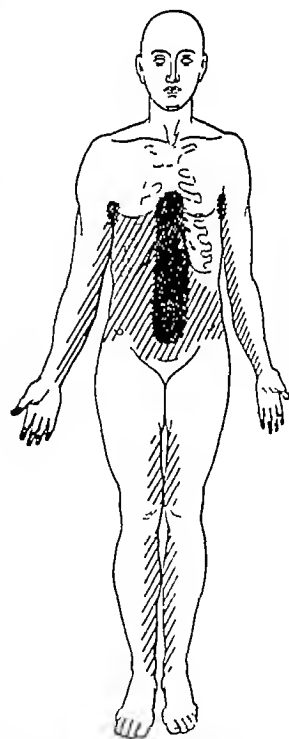


Fig 2—Patient with postural hypotension. Sweating test revealed a partial anhidrosis. Shaded areas indicate sweating.

12 Hines, E. A. Jr. and Brown, G. E. A Standard Test for Measuring the Variability of Blood Pressure. Its Significance as an Index of the Prehypertensive State. *Ann. Int. Med.* 7: 209-217 (Aug.) 1933.

*The Standard Exercise Tolerance Test*<sup>13</sup>—The method described by Master and Oppenheimer is used. This employs a staircase that has a height of 1½ feet and consists of two steps. The standard exercise is fifteen trips for each minute. The response of the pulse

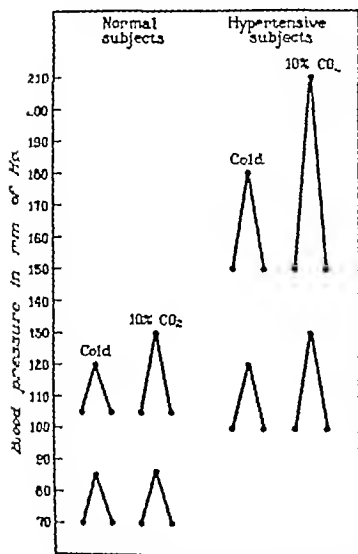


Fig 3—Response of the blood pressure of normal and hypertensive subjects to cold and carbon dioxide pressor tests

and blood pressure is then measured and the amount of time necessary for these to return to their previous levels is noted. An approximation of the number of foot pounds of work performed may be determined roughly by multiplying the weight of the patient by the height of the staircase (1½ feet) and then multiplying the result by the number of trips performed. Other forms of exercise tests for clinical use have not been as satisfactory, the so-called hop test varies greatly with the ability of the individual to perform the exercise, and it is impossible to determine the foot pounds of work performed.

#### CLINICAL APPLICATION

*Tests for Vasodilatation*—The usefulness of determining the amount of vasodilatation in digits is twofold. First, it aids in the differentiation of the organic and vasomotor disturbances of the extremities. In pure vasomotor disorders such as Raynaud's disease and other forms of vasospastic disturbances, vasodilatation as measured by the increase in the surface temperature is uniform in the different digits. If organic disease coexists with vasospasm, there are variations in the amount of dilatation obtained in the digits (fig 4). This method assists in localizing the presence and degree of localized arterial insufficiency. Arteriography of the vessels of the hands has proved an accurate procedure, because visual evidence is obtained of closure in arteries that are not palpable. Arteriography cannot be applied with the same accuracy in the feet as it can in the hands. Second, the vasodilating test assists in the selection of patients who have occlusive arterial disease for sympathetic ganglionectomy. The need for accurate preoperative selection of patients led to the development of this procedure.<sup>14</sup> In cases of thrombo-angitis obliterans, scleroderma and advanced forms of Raynaud's disease it is necessary before operation to have adequate information as to the amount of potential vasodilatation existent in the affected extremity.

If minimal degrees of vasodilatation are present, operation that involves the sympathetic nerves is not indicated. It may generally be said that an increase of from 4 to 5 degrees C in the surface temperature, or maximal vasodilatation indicated by a surface temperature of 30 C, or a vasomotor index of 2 or more is

essential to justify operation. As changes in the vasodilating component may occur within one month, repetition of tests may be advisable.

*Sweating Tests*—Tests for sweating have two important applications. First, they assist in the diagnosis of diseases affecting the function of sweating, such as the syndrome known as postural hypotension, a disease affecting the vasomotor nerves and also involving the fibers that control sweating. The response of sweating to a high environmental temperature determines the presence or absence of generalized or localized forms of anhidrosis, hypohidrosis or hyperhidrosis. Second, the test is of great importance in demonstrating whether or not complete denervation of the sympathetic fibers to the hands or feet is present after cervicothoracic or lumbar sympathetic ganglionectomy.

It may be said that in several hundred cases no instance of sweating of the feet has been demonstrated after removal of the second, third or fourth lumbar sympathetic ganglia. The operative problem for removal of the upper cervicothoracic ganglia is more difficult. Rams may be missed, this is determined post-operatively by the demonstration of sweating areas in the hands. Repetition of the sweating test at intervals of months determines whether regeneration of nerve fibers has occurred.

*Tests of Vasomotor Reactability*—These tests probably are of great importance. The "cold pressor test" seems to fulfil the requirements of a standard test of this type. Its simplicity, the uniformity of the stimulus and the invariable pressor response of the blood pressure are proof of its effectiveness. The rise in the blood pressure, or the response, and the maximal point, or "ceiling," determine a pattern of the individual vasomotor reactions. Our studies at the clinic have led us to believe that hyperreactions are synonymous with potential or existent essential hypertension. This I believe is true whether the levels of the blood pressure are increased or not.

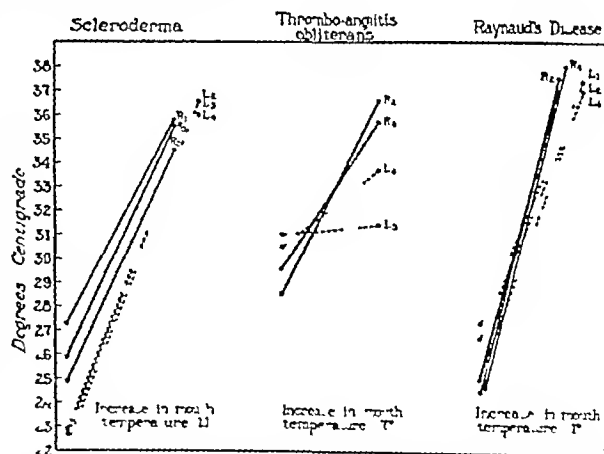


Fig 4—Uniformity of vasodilatation obtained with fever as measured by surface temperature in the digits of a patient with Raynaud's disease compared with variable vasodilatation in digits of a patient with scleroderma and one with thrombo-angitis obliterans

Study of large groups of subjects between 4 and 16 years of age indicates that about 15 per cent of them give a hyperreaction. One or both of the parents of these children showed a hyperreaction or had essential hypertension. Conversely, in cases in which children disclosed normal reactions, at least one parent was a normal reactor and had normal levels of blood pressure. This test then, may be of great use in engineering in establishing the constitutional nature of essential hyper-

<sup>13</sup> Master A M and Oppenheimer E T. A Simple Exercise Tolerance Test for Circulatory Efficiency with Standard Tables for Normal Individuals. *Am J Med Sci* 1929; 221:243 (Feb) 1929.  
<sup>14</sup> Brown G E, Craig W McK and Adson A W. The Selection of Cases of Thrombo-Angitis Obliterans and Other Circulatory Diseases of the Extremities for Sympathetic Ganglionectomy. *Am Heart J* 10: 143-145 (Dec.) 1934.

tension and hypotension. The differentiation of essential hypertension and secondary forms of hypertension that are associated with tachycardia, glomerular nephritis or hyperthyroidism can probably be accomplished by the response of blood pressure to a standard stimulus.

The response and "ceiling" of the blood pressure that occur with the pressor stimulation are accurate measuring rods for evaluating the effects of therapy. Following extensive sympathectomy, one can determine the potential reactivity of the remaining portion of the vasomotor nervous system that is left intact. The effects of drugs that increase or decrease vasomotor sensitivity can be evaluated.

**Postural Tests**—The effect of posture on the blood pressure is important in the diagnosis of the clinical syndrome known as postural or orthostatic hypotension with syncope. Postural studies should be carried out in all cases of vertigo or weakness appearing when the patient is in the upright position. The postural test is useful in measuring the completeness of resection of splanchnic nerves as carried out in the treatment of essential hypertension. After complete resection of the splanchnic nerves such as is carried out with anterior

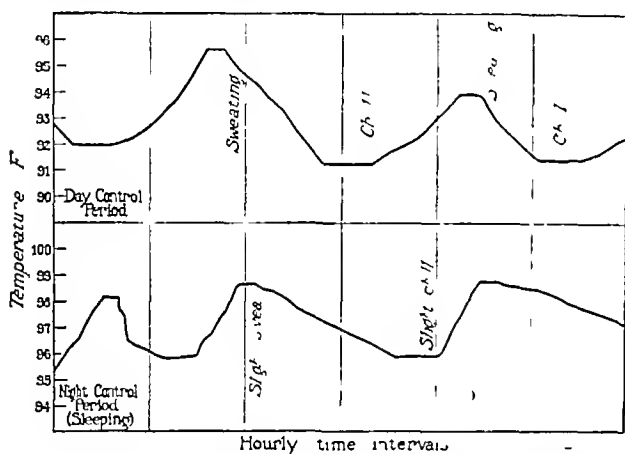


Fig 5—Continuous rectal temperature of a patient with paroxysmal hypothermia of many years duration and probably the result of some central disturbance affecting the heat regulating mechanism.

rhizotomy, there is a sharp lowering of blood pressure when the patient is in the upright position. An abdominal binder may be necessary, and efficacy of the abdominal support is measured by the manner in which it maintains the blood pressure when the patient is in the upright position.

**Functional Tests of the Response of the Heart to Standard Exercise**—The exercise tolerance test is useful in the diagnosis of cardiac neuroses such as effort syndrome, or neurocirculatory asthenia. If the acceleration response of the heart to the standard exercise is excessive, and if recovery to basal rates is delayed, a control is established for measuring effects of therapy. Vague symptoms may be brought out by this cardiac acceleration test, which frequently give a clue to the basis of the functional derangement. There is a group of young subjects who have an elevation of the systolic blood pressure and other signs of sympathetic over-reactivity, such as increased degrees of sweating, flushing and tachycardia. The question arises whether these signs are evidence of early grades of essential hypertension. The normal response in blood pressure to the 'cold pressor test' and the abnormal response of the pulse to the exercise tolerance stress distinguish this disorder from essential hypertension.

## COMMENTS

Clinical tests to measure responses of the autonomic nervous system have two broad purposes. The first purpose, which probably is more important, is to determine the sensitivity or reactivity of this nervous system in different functional disorders. In the conception of vagotonia and sympathicotonia, granting that an equilibrium or balance is maintained between the sympathetic and parasympathetic mechanisms, functional disorders do not follow this hypothetical anatomic balance. Cannon's conception of homeostasis seems to approach more closely the truth, in that the organism as a whole must be kept in a state of equilibrium from the broad physiologic aspect rather than from the narrow anatomic point of view. Health represents an equilibrium or homeostasis of the organism which is protected with an emergency mechanism adequate to adjust itself successfully to changing environmental stress. Cannon<sup>15</sup> has suggested tests that impose stress on the adapting mechanism of the body. The fitness of the individual to adapt himself to sudden changes in his environment as carried out by tests similar to those used for aviators in the war may make "fitness" a quantitative expression.

Many functional disorders, then, represent a departure from this normally balanced physiologic state. This variation may be a diminished response, or hyporeaction, or an excessive response or hyperreaction. The condition known as essential hypertension is one which by virtue of some abnormal reactivity of the vasomotor mechanism illustrates an excessive response of the systemic blood pressure to stimulation. This seems to be a constitutional fault demonstrable in early life. It may be the fundamental abnormality which in later years eventuates in the clinical condition known as essential hypertension. In early life this is a functional state in which the emergency mechanism is too effective in its response to intrinsic and extrinsic stress.

A similar illustration holds in Raynaud's disease and other forms of primary vasospastic neuroses. The response of the surface vessels of normal subjects to cold is constriction of the arterioles and capillaries which produces faint grades of pallor, rubor or cyanosis of the skin. There is a slowing of the flow of blood in the capillaries. In Raynaud's disease the reaction to cold is exaggerated, but in other respects it is the same as normal. The hyperreaction expresses itself locally rather than systemically as hypertension. This is an exaggeration of the normal reaction. In both Raynaud's disease and essential hypertension there is a constitutional vasomotor status with excessive responses to certain forms of stress. Erythromelalgia represents an overreaction and excessive vasodilatation of the vessel in the extremities to exercise or heat. The hyporeactive states such as essential hypotension are not as clearly defined and it is doubtful whether they can be classified as pathologic states as symptoms usually are not present. Lessened wear by virtue of slight reaction at least as related to blood vessels, promotes longevity rather than shortened cellular life, which is consequent to excessive wear.

The problem of clinical testing consists in subjecting the patient to a standardized form of stimulation in which the response can be compared to that of 'normal subjects.' In vasospastic disorders, the sharp responses in surface temperature to lowered temperatures, the slower recovery with warm temperatures, and the sharp

color changes distinguish abnormal from the normal reactions. In these functional hyperreactive states homeostasis is maintained, but at the expense of excessive reaction in the blood vessels. The extension of this thought in clinical medicine, then, evolves itself around the question of precise forms of tests and their interpretation.

The simple method of testing the cardiac acceleratory response by exertion has long been used in these studies and a functional disorder of the sympathetic mechanism known as the effort syndrome, or neurocirculatory asthenia, has been recognized. A similar line of reasoning has been carried out in the testing of response of the peripheral vasomotor mechanism. Fever throws on the organism an abnormal stress in attempting to make adjustments that produce vasodilatation of surface vessels. Localized vasospasm may be so intense as not to relax completely with fever, while in normal subjects complete relaxation is invariable. An attempt is being made to determine whether or not variations of this response to various vasodilating measures are of importance in interpreting or differentiating the vasomotor disorders, which are as yet poorly defined. Further development of this theme of testing is being carried out with reference to the disorders of the heat regulating mechanism. There are a group of subjects with abnormally reacting thermoregulating mechanisms (fig 5). Exaggerated rises in the temperature of the body occur from intrinsic and environmental stress. Accurate devices, which measure and record the temperature of the body continuously, permit of accurate study of this hypersensitive mechanism. Instances have been found in which psychic stimuli were followed by pathologic increases in the temperature of the blood and by subjective symptoms.

The second general purpose of this form of investigation is more specific than the first. The test is used to predict the dilating effects of interruption of the sympathetic nerves by operative measures. One prognostic test based on the response of vasoconstriction to fever determines the available vasodilatation. Another form of investigation does not involve stress per se but reproduces temporarily what is accomplished with operations that involve the sympathetic nervous tract. Anesthetization of the sympathetic ganglions and peripheral nerves illustrates this point. These procedures determine quantitative effects on the regional circulation by stimulating the vasomotor mechanism or by temporarily paralyzing the sympathetic pathways.

The importance of functional disorders is increasingly evident to the clinician. They represent a puzzling array of symptoms and signs of disturbed function which are slightly understood. These signs and symptoms are difficult to evaluate because of absence of pathologic changes, and because of difficulties in measuring variation from normal reactions. This is especially true in visceral neurosis.

When a disease or disorder can be measured in terms of disturbed function, progress is inevitable. This conception is urgently needed in the large field of functional states. One application of testing emotional-psychic effects on the autonomic nervous system has been in the problem of detection of crime with the so-called lie detector. The broad conception of Cannon has done much to simplify matters and as the normal state is visualized the abnormal state becomes increasingly clear. The newer point of view of Dale<sup>16</sup> is most

stimulating. This investigator recommended the separation of the autonomic nervous system into the nerves that are stimulated by epinephrine, which he designated as "adrenergic" nerves, and the nerves that are stimulated by choline, which he designated as "cholinergic" nerves. This pharmacologic classification seems to offer more to the clinician than a separation based on an anatomic division. The entire problem is just in a formative state. Facts are fragmentary, but the problem is assuming a logical and useful pattern. I predict that the next major development in clinical medicine will be in the direction of the autonomic nervous system and its disorders.

## ESSENTIAL PHARMACOLOGY OF THE AUTONOMIC NERVOUS SYSTEM

D. E. JACKSON, PH.D., M.D.

CINCINNATI

In one or more of four different places, drugs that affect the autonomic nervous system may exert their actions. These places are, first, the nuclei of origin of the autonomic nerves within the central nervous system; second, the outlying ganglions located on the course of the autonomic pathways; third, the terminations of the autonomic nerves in the structures that are thus innervated; and last, the carotid sinus. The actual nerve fibers themselves appear to be peculiarly resistant to the action of drugs.

The pharmacology of the autonomic nervous system involves some of the best and most definitely known of all drug phenomena, as well as some of the most obscure. The autonomic nervous system penetrates every nook and corner of the human body, its reaction to drugs is of interest from every angle of the practice of medicine. There is an old saying that providence exercises a special watchfulness over fools. That is exactly what the autonomic nervous system does for all the rest of us. And it does this work so well that probably no one living can quite appreciate all the devious, obscure and intricate means and processes by which our well being or the reverse thereof, is effected. And there is probably no function, process or reaction of the autonomic nervous system which cannot be, either directly or indirectly—and usually very specifically—stimulated, depressed or abolished completely by the action of drugs. Thus one might expect a large number of drugs to be included in this list. Of the group known as sympathomimetic amines alone, Trinter has recently been able to investigate some 100 samples. There are now known about 350,000 organic drugs. In addition to these there are a few thousand inorganic substances or combinations. If any one of the great majority of these substances should be brought into solution in the blood it would be extremely likely to affect in one way or another some portion of the autonomic nervous system.

It has been a long time since the crude forms of some of the present day autonomic drugs became known to man. Nearly 5,000 years ago the emperor Shen Nung tasted ma huang from which is derived ephedrine and decided it was good for fever and for sweating for both of which it is now known to be of no use whatever. And over 2,000 years ago conium macu-

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16. Dale, H. H. Chemical Transmission of the Effects of Nerve Impulses. Brit. M. J. 1: 835-841 (May 12) 1934.

latum, from which conine is derived, snuffed out the life of Socrates to satisfy the demands of the law. Duboisia hopwoodii, curare, lobelia inflata, physostigma venenosum, areca catechu and nicotiana tabacum represent a few of the present day connections with some of the lowest and most primitive forms of savagery.

A great many drugs bring about sympathetic responses as a result of their action within the central nervous system. Under ordinary circumstances one is apt to lose sight of this action. A good illustration is seen in the action of strychnine in an animal that has received just enough curare to paralyze the endings of the motor nerves in the skeletal muscles but not enough to depress seriously the ganglions on the course of the vasomotor nerves. In such an animal the sudden injection intravenously of a good sized dose of strychnine

And it is perhaps, in some respects, rather rapidly becoming more obscure as each specialist in that particular field presents his contribution, for new deals here, as elsewhere, have given a sensation of "shunning" to foundations on which we formerly felt that we could firmly stand.

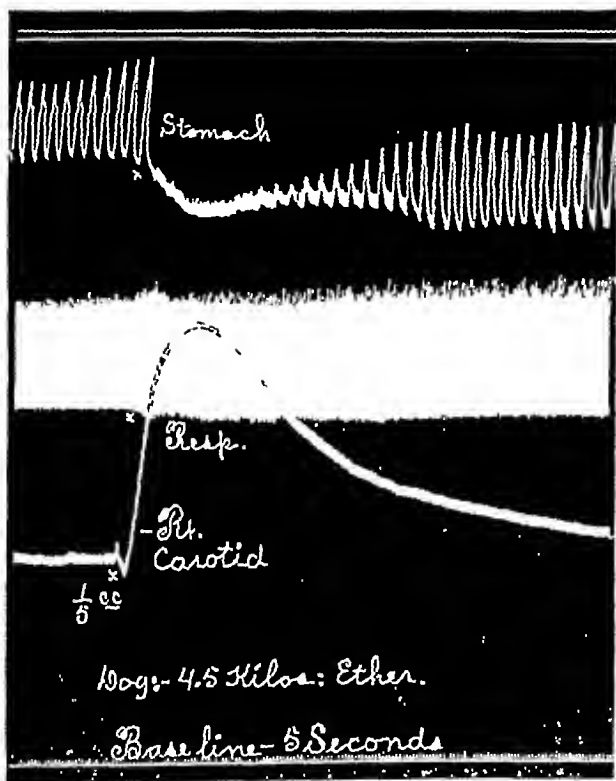
Briefly, I may mention some of the older drugs that act on the autonomic ganglions and the peripheral nerve terminations. Among the former are those like nicotine, lobeline, methyllordenine, cytisin and conine, the action of which consists in a more or less marked primary stimulation of the ganglions, followed, if the dose is large enough, by depression and paralysis. But the action of curare on these ganglions is purely depressant. To this group belong also some other preparations, such as certain trimethyl ammonium compounds and acetylcholine, which has both a nicotine and a muscarine action.

The autonomic nerves are fairly well divided into two great groups, the craniosacral or parasympathetics, and the thoracolumbar or true sympathetics. Pharmacologically there is a certain amount of overlapping between these two systems. The most obvious example of this is to be found, perhaps, in the sweat glands, the nerve supply of which is derived from the thoracolumbar group, but these nerves here react to drugs in the same manner as the parasympathetics do in other locations. Parasympathetic nerve terminations are stimulated by such drugs as pilocarpine, muscarine, physostigmine, arecoline, guanidine, methylguanidine and acetylcholine, while the same endings are paralyzed by such drugs as atropine, homatropine, hyoscyamine and scopolamine.

It must be borne in mind that these parasympathetic nerves are further divided into two groups, motor and inhibitory, and when a drug either stimulates or depresses a group of these endings the result will bear its corresponding relation to the physiologic function of that particular group. The same relation holds true with respect to the corresponding reactions and functions of the motor and inhibitory fibers of the true sympathetics.

Following the earlier work of Dale on ergot, it was held for many years that ergotoxine, while stimulating the motor sympathetic endings in small doses, would in larger quantities paralyze these motor endings, leaving the inhibitory endings intact, without having either stimulated or depressed them. A great volume of literature was built up as a result of experiments based on this conception of the action of ergotoxine. But Rothlin<sup>1</sup> has brought forward evidence to show that ergotoxine paralyzes both motor and inhibitory terminations of the true sympathetics. What bearing the latter observations, if finally fully confirmed, may have on the present and earlier conceptions of certain phases of the physiology and pharmacology of the sympathetic nerves remains to be seen.

The stimulation of true sympathetic nerve endings by drugs is a very modern conception. Perhaps the earliest and best known example is epinephrine, which has been isolated less than thirty-five years. But in recent years a large number of similarly acting, and often nearly related, compounds have been synthesized or discovered in nature, and certain ones of these have now become widely used in medical practice. In practically all cases these drugs stimulate both the motor



Tracing of stomach, respiration and blood pressure showing the sympathomimetic action of  $\beta$  methyl  $\frac{1}{2}$  methylamino- $\beta$ - $\gamma$  heptene in an anesthetized dog.

will produce a marked and prolonged rise in the blood pressure as a result of the strong stimulation of the vasomotor centers in the medulla and cord. Without curare, of course, the rise in blood pressure, although present, would be much involved and obscured by the generalized systemic convulsions.

Many other drugs, in a similar fashion, may thus act centrally to bring about peripheral manifestations of autonomic reactions. The constriction of the pupil and, in dogs, the slowing of the heart by morphine are familiar examples. But many other reactions, such as control of the water distribution in the body, the regulation of body temperature, the control of blood sugar and disturbances of digestion and secretion, may thus be influenced by drugs acting within the central nervous system.

The action of drugs on the peripheral divisions of the autonomic nervous system is an involved and obscure subject.

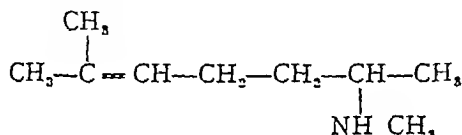
<sup>1</sup> Rothlin E. Arch. internat. de pharmacodyn. et de thérapeut. 25: 459 1923. J. Pharmacol. & Exper. Therap. 38: 657 (Aug.) 1929.



and the inhibitory endings of the true sympathetic nerves. Clinically both these reactions are utilized. Epinephrine, for example, will dilate the bronchi by stimulating the endings of the bronchodilator nerves, and it constricts blood vessels when injected with a local anesthetic.

Epinephrine, ephedrine, synephrine, neosynephrine, propadrine (the hydrochloride of phenyl-1-amino-2-propanol-1), beta-tetrahydronaphthylamine, uzarin (a crystalline glucoside derived from an African plant, its chemical structure is unknown but it acts like epinephrine), some samples of methylene blue, tyramine, and the like belong in this group. Usually one expects such compounds to contain a catechol nucleus with a side chain bearing an amino group, but this type of structure is by no means essential. A large number of compounds having an epinephrine-like action in a lesser degree have been synthesized. Most of these are useless in practical medicine, either because they are too weak or because they possess other undesirable actions.

Here I may mention briefly one of these compounds whose action I have recently investigated. This is  $\beta$ -methyl  $\zeta$ -methylamino- $\beta$ - $\gamma$ -heptene. It is a straight chain compound having the formula



When injected intravenously in proper dosage and under favorable conditions, it will produce a great rise in blood pressure, which may last for from two and a half to three hours. The stomach and intestine are relaxed, as are also the bronchioles, while the pupils tend to dilate. It has been known for a quarter of a century that if any drug having an epinephrine-like action is injected into the blood it will very generally pick out some special organ or some particular set of sympathetic fibers on which it will act relatively more strongly than it does in other regions of the body. It would be a great help to practical medicine if a few drugs could be found which would thus exclusively and specifically act on only one or two organs. I believe there is a fair possibility that  $\beta$ -methyl  $\zeta$ -methylamino- $\beta$ - $\gamma$ -heptene may be useful in this direction for relaxing the stomach and intestine in postoperative tympanites and possibly in some gynecologic conditions.

The carotid sinus and its associated structures have only recently been investigated. Largely through the work of Hering,<sup>1</sup> Koch,<sup>2</sup> and especially Heymans,<sup>3</sup> and his co-workers we have been given a new conception of the regulatory action of this mechanism on the heart and blood pressure on the respiration and probably on a number of other functions. According to this newer work not only pressure variations within the carotid sinus but also drugs such as nicotine and even variations in the carbon dioxide and oxygen content of the blood may produce local reactions in the carotid sinus which reflexly by way of the nerve of Hering and the medullary centers will vary the heart rate, the respiration and the like. It is probably too soon as yet to evaluate fully the significance these observations may have in such conditions as carbon

monoxide poisoning, the introduction into the blood of ether, tribrom-ethanol in amylene hydrate, ethylene, arsphenamine, and the like, or acidosis or the low blood pressure of shock.

Only recently Dale<sup>4</sup> has coined the new terms "cholinergic" and "adrenergic" to define more clearly the functions of those groups of fibers of the general autonomic nervous system which he conceived to liberate either acetylcholine or epinephrine when nervous impulses reach the point at which these fibers terminate in the glands or smooth muscle fibers. Thus, the postganglionic parasympathetic fibers will liberate acetylcholine at their terminations, and atropine will stop or prevent the action of this acetylcholine on the nerve cells or muscle fibers because atropine, according to this view, acts on these cells or fibers directly and makes them insensitive to the action of the acetylcholine. And physostigmine serves to intensify the action of acetylcholine, which normally is rapidly destroyed in the tissues by an esterase, because the physostigmine uses up in its own hydrolytic destruction much of the esterase that would otherwise be left free to destroy the minute amounts of acetylcholine liberated. This temporary diversion of the esterase from the acetylcholine allows it to accumulate in larger quantities and thus produce greater pharmacologic effects.

Normal or artificially induced impulses descending over the vagus nerves may produce approximately normal contractions in the intestine after atropine. Dale<sup>5</sup> and Gaddum have suggested that in this and other similar instances "the nerve impulses liberate acetylcholine so close to the reactive structures that atropine cannot intervene, whereas it can prevent its access to them when it is artificially applied from without."

The true sympathetic nerves are considered to liberate epinephrine at their terminations. Cannon<sup>6</sup> and his co-workers believe that stimulation of sympathetic nerves liberates two substances, "sympathin E," which stimulates distant motor sympathetic nerve endings, and "sympathin I," which stimulates distant inhibitory sympathetic endings. Cocaine potentiates these effects.

In some instances fibers that belong anatomically to the true sympathetic system are cholinergic in action, e. g. the nerves to the sweat glands, and apparently some to the blood vessels, for in a normal animal acetylcholine dilates the arterioles while after atropine it no longer has this effect.

Dale and his colleagues have obtained experimental evidence which has been corroborated by others, that the passage of impulses from the endings of preganglionic fibers over to the ganglion cells of the postganglionic fibers is accomplished by the liberation of acetylcholine probably in all instances including both the true sympathetics and the parasympathetics.

Perhaps attention should be called to the older views and nomenclature for nerve endings and plates, myoneuronal junctions, receptors, and the like. These have undergone considerable change since the beginning of this century and it is probable that the newer conceptions of cholinergic and adrenergic fibers may necessitate some further modifications of present-day views. The anomalous action of certain nerves on the stomach, intestine and bladder after atropine, the prevention of the vasodilator effects of acetylcholine by atropine, the failure of some drugs to act on certain organs after nerve degeneration while other drugs remain active,

<sup>1</sup> Hering H. E. Die Karotissinnesreflexe. Dresden: Th. Steinkopff.

<sup>2</sup> Koch Eberhard. Die reflektorische Selbststeuerung des Kreislaufes. In: Koch Bruno, editor. Ergebnisse der Kreislauforschung. Dresden: Th. Steinkopff. 1931.

<sup>3</sup> Heymans Cornelle. Le sinus carotidien et les autres zones vasomotrices réflexogènes. Paris: Presses Universitaires de France. 1929.

<sup>4</sup> Dale H. H. J. Physiol. 80:10, p. 1933.

<sup>5</sup> Dale H. H. Brit. M. J. 1:235 (May 12) 1934.

<sup>6</sup> Cannon W. B. Tr. A. M. Physicians 48:236, 1933.

or may even show increased activity, all constitute problems on which further light is needed

There are a great many instances in which drugs act profoundly on organs or structures that are innervated entirely by the autonomic nerves, and yet these nerves are not definitely known to be involved in the action. Histamine, posterior pituitary extracts (pitocin, pitressin), barium and nitrites are examples. The failure of some of these drugs to cause contraction of certain smooth muscles, the stimulation of secretion in some glands but not in others, relaxation of smooth muscles under certain conditions while the usual reaction is contraction, and various other obscure phenomena may very well lead one to suspect that these drugs really do have some action on nervous structures, although its limits cannot as yet be defined.

It is perhaps a matter of some significance that no one has been asked to speak specifically on the pathology of the autonomic nervous system in this symposium, for aside from the rather vague concepts of vagotonia and sympathicotonia one now hardly thinks of the autonomic nervous system as having any pathologic changes at all. Yet probably the greatest remaining interest that one might have in the action of drugs on the sympathetic system will lie in the matter of how much light these actions may throw on the etiology, nature and treatment of a variety of still obscure diseases. There are undoubtedly a number of diseases or symptom complexes, that are largely, if not entirely, due to unusual failures or anomalous reactions of the autonomic nervous system. I may mention only a few of these to illustrate the very wide range of pathologic conditions on which the drugs I have been discussing may throw some light. Bronchial asthma, angioneurotic edema, hypertrophic rhinitis and urticaria will come to mind at once. Migraine has recently been treated with apparently considerable success by ergotamine tartrate, paroxysmal tachycardia has been promptly checked by subcutaneous injection of the ethyl ether of beta-methylcholine, and patients having myasthenia gravis have improved under the dimethyl carbamic ester of 3 hydroxyphenyl-trimethyl-ammonium methyl sulfate and five days ago Dr. H. E. Simon of Birmingham, Ala., reported two cases as apparently specifically relieved by injection of anterior pituitary extract. But conditions as diverse as hiccups and angina pectoris are undoubtedly largely dependent on pathologic reactions in the autonomic nervous system even though it is not as yet understood how these symptoms are produced. One can hardly fail to suspect that the autonomic nervous system is specifically involved in such conditions as hyperpnea, auricular flutter, some forms of peripheral vascular disease, acromegaly, paroxysmal tachycardia, leontiasis ossea, diabetes insipidus and some forms of gangrene, of which that produced in chronic ergot poisoning is an example. Possibly the recent isolation of ergometrine in England by Dudley and Moir<sup>8</sup> and of ergostetrin by Thompson<sup>9</sup> in Baltimore and ergotocin by a group of Chicago workers<sup>10</sup> may ultimately throw some light on the latter condition.

<sup>8</sup> Dudley H. W. and Moir Chassar. *Brit. M. J.* 1: 520 (March 16) 1933.

<sup>9</sup> Thompson M. R. The Active Principles of Ergot: report read before the Federation of American Societies for Experimental Biology. Detroit, April 11, 1933.

<sup>10</sup> Davis M. E., Adair F. L., Rogers Gerald, Kharasch M. S. and Laganit R. R. A New Active Principle in Ergot and Its Effect on Uterine Motility. *Am. J. Obst. & Gynec.* 29: 155 (Feb.) 1935. Ergotocin, *Lancet* 1: 848 (April 6) 1935. The Active Oxytocic Principle of Ergot. editorial J. A. M. A. 104: 1910 (May 25) 1935. Ergotocin. *Science* 81: 388 (April 19) 1935.

## INDICATIONS FOR OPERATIONS ON THE SYMPATHETIC NERVOUS SYSTEM

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Indications for surgical treatment of diseases resulting from dysfunction of the sympathetic nervous system are based on the symptoms produced and the results obtained from interruption of the sympathetic pathways. The symptoms result from abnormal vasomotor stimuli and motor imbalances in the smooth musculature of the colon, sigmoid, rectum, bladder, ureters and uterus. Since afferent sensations of pain travel through fibers that may be of sympathetic origin and these fibers run parallel with the postganglionic fibers to blood vessels and visceral organs pain also is considered a symptom resulting from dysfunction of the sympathetic nervous system.

The surgical treatment consists of sympathetic ganglionectomy and trunk resection, with section of ram and postganglionic fibers,<sup>1</sup> in order to interrupt completely sympathetic pathways carrying efferent and afferent stimuli to a given area or organ.

The relief of symptoms obtained by one of the surgical procedures in the treatment of diseases produced by excessive vasomotor constriction results from the increased flow of blood to the extremity or organ involved. The motor imbalance resulting in excessive retention of urine in the bladder or ureters, or the accumulation of feces as observed in congenital megacolon, is corrected by decreasing the stimuli by interrupting sufficient sympathetic fibers to balance the mechanism of retention with evacuation. Pain is relieved by the interruption of fibers carrying afferent sensations of pain, by increasing the flow of blood to the extremity or organ, and by relieving smooth muscle spasm. Though some of the sensations of pain travel along fibers in the sympathetic trunks, most of the relief obtained comes from the restitution of diseased tissue. The latter afferent impulse is carried directly over spinal nerves. Dysmenorrhea undoubtedly results from excessive vasomotor stimuli and muscular spasm. The relief obtained by resection of the presacral nerves is the result of interruption of nerve fibers carrying sensations of pain, vasomotor stimuli and motor stimuli to the uterine muscles.

### PERIPHERAL VASCULAR DISEASES

Although there are a number of peripheral vascular diseases which develop as a result of, or are aggravated by, vasomotor spasm, it is imperative to analyze each group of diseases separately, since in some instances the symptoms are of such a mild character that medical management is adequate, whereas in others the disease has progressed to such a degree that, as a result of obliteration of principal and collateral arteries and

From the Section on Neurologic Surgery the Mayo Clinic. Owing to lack of space this article is abbreviated in *THE JOURNAL*. The complete article appears in the author's reprints.

Read before the Section on Pathology and Physiology at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 13, 1935.

<sup>1</sup> Adson A. W. Surgical Relief of Raynaud's Disease and Other Vascular Disturbances by Sympathetic Ganglionectomy and Perivascular Neurectomy. *Ann. Clin. Med.* 5: 161, 167 (Aug.) 1926. Cervicothoracic Ganglionectomy, Trunk Resection and Ramisection by the Posterior Intrathoracic Approach. *Am. J. Surg.* 11: 227, 232 (Feb.) 1931. Adson A. W. and Brown G. E. Treatment of Raynaud's Disease by Lumbar Ramisection and Ganglionectomy and Perivascular Sympathetic Neurectomy of the Common Iliaes. *J. A. M. A.* 84: 1908, 1910 (June 25) 1925. Livingston W. K. The Clinical Aspects of Visceral Neurology with Special Reference to the Surgery of the Sympathetic Nervous System. Baltimore: Charles C. Thomas, 1935.

destruction of tissue, little or no vasodilating effect can be obtained by sympathectomy

Surgical treatment is instituted when medical treatment fails or when the disease is thus slowly progressing. It is not employed, however, until the patient has been carefully analyzed to determine the status of the remaining blood vessels. This is accomplished by carrying out vascular studies to determine by increased skin temperatures the vasodilating effects on the peripheral circulation in terms of blood flow. Vasodilating effects can be produced by nerve block, spinal anesthetic agents induced fever, changes in the temperature of the skin from excessive covering<sup>2</sup> and the administration of histamine or alcohol. In our experience at the clinic the most reliable test in determining the possibilities of vasodilatation have resulted from foreign protein therapy and the subsequent fever reaction.<sup>3</sup>

The electrodes of the electrothermocouple are fastened to various portions of the fingers, toes, hands, feet and body, in preparation for readings of surface temperature. Readings are first recorded of the temperature of the room and of the mouth and surface of the skin. Thus corrections can be made for the environmental temperature, and the temperature of the mouth and skin can be compared with the corresponding temperatures of a normal person and with the readings that are taken during the height of fever. The fever is produced by administering, intravenously, a foreign protein such as from 5,000,000 to 75,000,000 dead bacilli in triple typhoid vaccine. The dose depends on the weight and sex of the patient. Hourly readings are made until maximal pyrexia has been obtained. These readings are compared with the initial temperatures to determine the ratios of increased temperature.

In studying the temperature of a normal person it will be observed that the temperature of the mouth may have increased as much as an average of 2 degrees C (3.6 degrees F), whereas the temperature of the skin over the digits will have increased from 4 to 6 degrees C (7.2 to 10.8 degrees F) or from two to three times more than the temperature of the mouth, indicating that the peripheral arteries have been opened by inhibition of the vasomotor center and that more blood has been permitted to flow to the periphery. In cases of a vasospastic disorder, Raynaud's disease, the difference in temperature is still greater because the initial surface temperature of the digits is lower than is that of a normal subject who is exposed to the temperature of the same room. In cases of general arteriosclerosis, there may be little if any difference in the temperature of the skin before and after administration of the foreign protein, indicating that the vessels are incapable of relaxing to allow an increase in the flow of blood to the periphery. In cases of thrombo-angiitis obliterans it is possible to determine whether or not there exists an element of vasomotor spasm of the collateral vessels and patent arteries. It is also possible by individual readings to determine the condition of each digit. Therefore the test serves as an index and unless the rise in temperature of the skin of the digits is two or more times greater than the rise of the oral temperature, the condition is considered inoperable. The test also permits determination of the degree of collateral circulation in different portions of the same digit.

Arteriography<sup>4</sup> has become a very useful aid in the differential diagnosis of peripheral vascular diseases, since the peripheral vessels appear attenuated in the vasospastic diseases and obstructed in the occlusive diseases. It also demonstrates the severity of the disease in the individual digits, which serves as an important prognostic factor.

Therapeutic tests from the induction of fever by the administration of proteins, bed rest and contrast baths also serve as important factors in selecting patients for sympathetic operations, since those who respond favorably to therapeutic tests will respond favorably to properly planned sympathetic ganglionectomy, trunk resection, and ramisection.<sup>5</sup>

#### RAYNAUD'S DISEASE

Raynaud's disease was not considered to be a vasomotor phenomenon until Raynaud<sup>6</sup> called attention to the local asphyxia and cyanosis that preceded gangrene.

*Selection of Cases*—The real problem is to select suitable cases for sympathectomy and to decide when operation is indicated. The vasospastic phenomena may be intermittent or continuous. If the attacks are intermittent and mild, disturbing symptoms or trophic changes do not occur because complete recovery takes place between the attacks of vasomotor spasm. When the symptoms become continuous and interfere with normal activities of the patient and fail to respond to medical treatment, surgical procedures are instituted. It has been proved that vasodilatation results from section of vasomotor fibers carrying vasoconstrictor impulses, that the increase in temperature of the skin, produced by injections of foreign protein, can be reproduced by sympathetic ganglionectomy and by trunk resection, and that the increased flow of blood, measured by increased elimination of heat, continues and does not recede to the level at which it was before operation.

The relief of vasomotor spasm promptly results in an improvement in the circulation. The skin takes on a pinkish hue, asphyxia and cyanosis disappear, ulcers heal and gangrene, if present, will soon show a line of demarcation and the necrotic tissue will loosen and slough away. Swelling and pain soon subside and recovery takes place. If the process is accompanied by scleroderma or sclerodactylia, the results are less satisfactory and recovery will be less prompt, since these two complications are manifestations of an extensive disease, which has resulted in obliteration of blood vessels because of loss of tissue and fibrosis in addition to the original vasospasm.

#### SCLERODERMA

The acral type of scleroderma<sup>11</sup> is the one that responds to sympathectomy. It is the scleroderma that results from the prolonged vasomotor spasm of Raynaud's disease. This acral type differs from the amorphous type in that the disease affects chiefly the skin over the hands, forearms, face, neck and scalp. Occasionally the disease involves the skin of the feet. Atrophy and contracting processes of the skin are asso-

<sup>2</sup> Collier I. A. and Maddock W. G. The Differentiation of Spasm from Organic Peripheral Vascular Occlusion by Skin Temperature Response to High Environmental Temperature. *Ann Surg* 96:19-32 (Oct) 1932.

<sup>3</sup> Adson A. W., and Brown G. E. The Treatment of Raynaud's Disease by Resection of the Upper Thoracic and Lumbar Sympathetic (Cervical and Trunk) Surg., Gynec. & Obst. 48:5-603 (May) 1929.

<sup>4</sup> Allen E. V. and Camp J. D. Arteriography. A Roentgenographic Study of the Peripheral Arteries of Living Subjects Following Their Injection with a Radioopaque Substance. *J. A. M. A.* 101:618-623 (Feb. 23) 1935.

<sup>5</sup> Adson A. W. The Present Status of Surgery of the Sympathetic Nervous System. *Proc. Inter-State Post-Grad. M. A. Soc. North America Philadelphia* 1934 pp. 411-422.

<sup>6</sup> Raynaud Maurice. On Local Asphyxia and Symmetrical Gangrene of the Extremities. Selected Monographs London: New Sydenham Society 7:10-1150 1864.

<sup>11</sup> Brown G. E., O'Leary P. V. and Adson A. W. Diagnostic and Physiologic Studies in Certain Forms of Scleroderma. *Ann. Int. Med.* 1:531-534 (Dec.) 1910.

ciated with similar processes in underlying structures, and it is not unusual for a patient to complain of motor weakness and inability to open the mouth or to protrude the tongue. Arthritic changes often become manifest in the fingers, this condition is referred to as sclerodactylia. The fact that sclerodermic changes are more pronounced in the skin of the uncovered parts, such as the hands, forearms, face and neck, than they are in the covered parts suggests that reflex stimuli of cold accentuate existing vasomotor spasm. The fact that underlying tissues are subject to atrophic changes suggests that vasospasm is not confined to the vessels of the skin but includes the vessels of the adjacent tissues.

**Selection of Cases**—Care should be exercised in selecting patients with scleroderma for sympathectomy, for in advanced cases the hide-binding process has strangulated and destroyed the arterioles, capillaries and venules beyond repair.

The relief of symptoms depends directly on the duration of the disease and on its relation to the phenomena of vasomotor spasm. The patients who obtain the greatest relief are those who present the early stages of scleroderma of the acral type which follows a prolonged history of Raynaud's disease. It is characterized by puffiness of the hands, with tightness of the skin over the knuckles and a beginning limitation of motion of the finger joints. When this involves the skin of the face and neck, the patient will complain of tightness and thickness of the skin. The normal facial lines disappear, leaving a masklike expression. As the process continues, atrophy and contractures take place and radiating lines appear about the mouth. The muscles of the face and tongue become rigid and limit the free movements of mastication.

Various types of sympathectomy are not indicated unless the vascular studies demonstrate that there is ample circulation and the vessels are susceptible of being dilated by interruption of sympathetic pathways. Studies of the peripheral vessels of the extremities with thorium dioxide sol and therapeutic tests are valuable in determining the extent of disease and the condition of the vessels. Following operation in the early group the skin becomes pink, warm and elastic and the muscles again become fusiform and flexible, with resultant improvement in strength. Patients who have been unable to open their mouths or protrude their tongues are again able to masticate their food as formerly. The skin, however, still remains thin and bruises easily, and ankylosed joints are not changed.

The operation is not indicated in the advanced stages of the disease when the skin becomes adherent to the knuckles and loses all its subareolar tissue, leaving it so tight and hard that it appears like leather drawn tightly over the bony digits.

#### CHRONIC ARTHRITIS, RHEUMATOID TYPE

The appearance of cold, wet, clammy skin over the hands and feet of asthenic patients suffering from chronic polyarthritis<sup>12</sup> of the smaller joints suggested that a vasodilating operation would at least be as effective as the local application of heat and the administration of foreign protein. Cervicothoracic and lumbar sympathectomy have been employed for a variety of arthritic lesions, but these operations have been of value only in relieving symptoms and checking the disease.

12 Henderson, M. S. and Adson, A. W. Sympathetic Ganglionectomy and Trunk Resection in Arthritis. Indications and Results. *J. Bone & Joint Surg.* 14: 47-56 (Jan.) 1932. Rowntree, L. G. and Adson, A. W. Bilateral Lumbar and Thoracic Sympathetic Ganglionectomy and Ramisection for Polyarthritis of the Lower and of the Upper Extremities. *Tr. A. Am. Physicians* 44: 221-230, 1929.

in the small group presenting definite disturbances, of sympathetic origin, characterized by vasoconstriction and hyperhidrosis. These vasomotor disturbances are definite indications for surgical intervention when adequate medical measures have failed to check the disease. The operative treatment does not alter deformities, contractures, or the condition of ankylosed joints. It is of no value in the treatment of arthritic processes in the larger joints such as the knees, elbows, hips and shoulders. The operation is most effective in younger individuals and is contraindicated for infective and senile arthritis. The relief brought about by the improved circulation is not as sudden and dramatic as that obtained following the treatment of Raynaud's disease, but there does result a continued progress toward recovery.

#### ESSENTIAL HYPERHIDROSIS

Essential hyperhidrosis<sup>12a</sup> is a disease in which excessive perspiration of the hands or feet interferes with the normal social and economic status of an individual. Certain forms of sympathectomy are indicated for the ablation of the sweating function of localized areas when the individual complains of being socially ostracized and unable to carry on with his regular vocation. My patients, previous to operation, complained of excessive perspiration of the hands to such an extent that they have been unable to work with papers or books, to handle fine fabrics, or to wear gloves without ruining them. They have complained of the constant embarrassment of meeting strangers when they have had to offer their wet, sweaty hands in salutation. Younger individuals have shunned the opposite sex because emotional strain increased the symptoms and deprived them of the pleasures of social contacts, such as dancing. Constant perspiration of the skin on the palmar surface of the hands results in maceration and erosion of the epidermis to such an extent that it becomes painful to use the fingers. The hands of these people may be warm or cold, depending on the environmental temperature. Summer temperatures and emotional situations definitely aggravate the symptoms.

Operations employed for the relief of this complaint are similar to those employed for the relief of the vasoconstriction of blood vessels of the extremities in Raynaud's disease, since the postganglionic ramus to the individual somatic segments are so intimately associated that it is impossible to separate one group of fibers from the other.<sup>13</sup>

The results following the operation are immediate and permanent. If the hands and face are involved, the skin promptly becomes dry and pink. The vasodilating effects produced by the operation are not contraindications. The skin does remain dry, and it is necessary that the patient apply hydrous wool fat ointment daily as is done following similar operations.

#### THROMBO-ANGIITIS OBLITERANS

Thrombo-angitis obliterans<sup>14</sup> is characterized by vascular thrombosis of inflammatory origin that occurs in both arteries and veins, although not at the same

12a. Adson, A. W., Craig, W. McK. and Brown, G. E. Essential Hyperhidrosis Cured by Sympathetic Ganglionectomy and Trunk Resection. *Tr. Western Surg. A.* 1934, pp. 383-400.

13. Kramer, J. C., and Todd, T. W. The Distribution of Nerves to the Arteries of the Arm with a Discussion of the Clinical Value of the Results. *Anat. Rec.* 8: 243-255, 1914. Potts, L. W. The Distribution of Nerves to the Arteries of the Leg. *Anat. Anz.* 47: 138-143 (Aug.) 1914.

14. Buerger, Leo. Thrombo-Angitis Obliterans. A Study of the Vascular Lesions Leading to Presenile Spontaneous Gangrene. *Am. J. M. Sc.* 136: 567-580 (Oct.) 1908. Diez, J. Angina Pectoris Treated by Resection of Cervical Sympathetic. *Rev. Assoc. med. argent. (Sci. Med. Int.)* 37: 591-598 (Dec.) 1924.

levels in each. Arterial thrombosis usually occurs in the main peripheral arterial channels, such as in the dorsalis pedis, posterior tibial, radial and ulnar arteries. In the more severe cases, arterial thrombosis ascends to include the popliteal and femoral arteries, and it may also occur in the brachial arteries. Venous thrombosis is more of the recurring type, and it may appear in any region of the foot, leg, thigh or arm. Arterial thrombosis is likely to affect the arteries of one leg more than those of the other, but, since the lesion has a tendency to progress and to spread, sooner or later it will affect the opposite extremity or the upper extremity. It also has been observed that, when there is occlusion of the principal arteries of one extremity, the arteries of the other extremity, though still patent, may show diminished pulsation.

**Symptoms**—Thrombo-angitis obliterans has a predilection for young, asthenic men, but it may affect robust men. Young asthenic women are occasionally afflicted. The initial symptoms usually consist of intermittent claudication on exertion of the muscles of the lower parts of the legs, but, as the disease progresses, pain is present even while the patient is at rest, and changes in color appear. The usual colors are those of rubor and cyanosis. They are accompanied by signs of passive congestion, swelling, localized phlebitis and occluded arteries. The changes in color are more prominent when the extremity is held in a dependent position and will disappear when it is elevated. The degree of collateral circulation can be determined clinically by the time that is required for the color to return when the extremity is lowered from a perpendicular to a horizontal position. Ulcers and gangrene appear in advanced stages of the disease.

Medical treatment consists of rest in bed, application of dry heat, the use of contrast baths and intravenous injection of protein. This is the treatment that should be employed in early and mild cases. In view of experience in the treatment of vasospastic disorders such as Raynaud's disease by sympathetic ganglionectomy and trunk resection, selected patients of this group have been subjected to similar operations in order to improve the circulation of collateral vessels.

**Selection of Patients for Sympathetic Ganglionectomy and Trunk Resection**—Before the introduction of the studies on induced fever I was compelled to operate without any particular method for the selection of patients, and I had to judge from results in previous cases whether or not a patient for whom the operation was contemplated would prove suitable. With the advent of studies of cutaneous temperature better selections have been made possible. Brown and his collaborators have demonstrated repeatedly that a preoperative increase in skin temperature from vaccine therapy has been reproduced and maintained by ganglionectomy and trunk resection which proves that vasomotor spasm of the collateral vessels has been relieved and that the circulation has been increased. The same criteria have been employed as those adopted in the selection of cases of Raynaud's disease. However selection should not be based on this method alone for it is unwise to operate on a patient during the period of extending arterial thrombosis; the danger is that thrombosis may ascend to include the femoral artery and may result in gangrene in spite of the operation. Those patients who present themselves with acute processes are placed in bed under medical treatment, until the lesion has become quiescent. This may require

from three to six weeks. Patients who have trophic ulcers or gangrenous digits are likewise treated medically, including administration of protein, until demarcation between healthy and diseased tissue appears and until healing of the ulcer begins, operation is then instituted. Occasionally it is wise to resect the thrombosed veins to hasten convalescence.

**Results of Surgical Treatment**—The results of sympathetic ganglionectomy in properly selected cases of thrombo-angitis obliterans are just as striking as those in cases of Raynaud's disease. Pain subsides, swelling disappears, and the ulcers heal with remarkable rapidity. Following operation, spontaneous amputation of the gangrenous digits usually occurs at a level much lower than that at which surgical amputation would have been performed. Vasodilatation and the improved circulation materially reduce the incidence of extending arterial thrombosis of the affected extremity, and they also reduce the incidence of such thrombosis in the opposite extremity. Intermittent claudication completely disappears in some cases, in others it is only diminished. The effect of interruption of vasomotor fibers to unoccluded and collateral arteries in cases of thrombo-angitis obliterans is similar to that accomplished in the treatment of Raynaud's disease.

The comparative results of treatment revealed that without adequate medical treatment, the incidence of amputation was 25 per cent, with medical treatment it was reduced to 14 per cent. Fifty-six per cent of the patients who were treated medically were markedly improved, the remainder were subjected to active recurrences. Eighty-three per cent of patients treated surgically returned to gainful occupations, and amputations of extremities were lowered to 4 per cent.

#### SPASTIC AND TROPHIC LESIONS

**Spastic Lesions**—Royle,<sup>15</sup> in his attempt to relieve a spastic condition of the extremities by ramisection, is responsible for the renewed surgical interest in the sympathetic nervous system. Although the experimental and clinical work of Royle and Hunter appeared to be convincing, other investigators have failed to corroborate the existence of sympathetic innervation of striated muscles in mammals. The clinical results observed have been corroborated, but not to the extent that they hoped for. The reduction of spasticity in cerebral palsies is worth while in selected cases in which patients are mentally alert and free from tremors and for those whose condition is only moderately severe. The results are undoubtedly attributable to the increased supply of blood.

**Osteoporosis**—Leriche<sup>16</sup> and a few other investigators believed that the improvement of the circulation by sympathectomy is of advantage in relieving the symptoms of osteoporosis. However this opinion is not generally accepted and the problem still remains to be investigated.

**Pohomyelitis**—Robertson<sup>17</sup> and others have shown by their investigations and operative results that extensive sympathectomies are of definite value in improving the circulation of the partially paralyzed extremity. They are especially effective in aiding the growth of the involved limb when it fails to keep pace with the opposite unaffected limb. Such operations promptly

15 Royle, N. D. The Treatment of Spastic Paralysis by Sympathetic Ramisection. *Surg. Gynec. & Obst.* 30, 701-720 (Dec.) 1924.

16 Leriche, Rene and Fontaine, Rene. *Chirurgie du sympathique*. *Rev. neurol.* 1: 1046-1085 (June) 1929.

17 Robertson, D. E. Sympathectomy in Children. *Surg. Gynec. & Obst.* 58, 312-317 (Feb.) 1934.



relieve the cold, painful and unpleasant sensations. These surgical indications will undoubtedly induce additional surgeons to employ the procedure in the treatment in similar cases.

**Trophic Ulcers**—Patients who have spina bifida occulta with neurotrophic changes occasionally have indolent ulcers on the soles. This condition is also associated with a vasomotor disturbance which is characterized by cold, wet, clammy skin on the extremities, and, since local heat has stimulated granulation and healing, lumbar sympathectomy has been employed very effectively in improving the circulation and healing of the ulcers. The procedure cannot be used indiscriminately but it is indicated in selected cases in which hyperhidrosis and vasomotor spasm are present.

**Causalgia and Painful Stumps**—Painful neuroma a neuroma on the proximal end of a nerve caught in the amputation scar, does exist but more often than not the situation of such pain is rather indefinite. Injuries of the palm and wrist in certain cases give rise to tender areas and to the projection of pain along the median nerve. The pain in amputated stumps is often indefinite in its situation. It appears to be projected into the absent hand or foot. Some of these pains are the result of traumatic neuritis, whereas others must be due to neuritis of the sympathetic fibers in the sheaths of blood vessels, for Flothow<sup>18</sup> has reported successful results following sympathetic ganglionectomy and trunk resection. My experiences have not been too gratifying, and I should therefore be cautious in advising sympathectomy. It is my impression that causalgia and painful stumps occur in cases in which patients have a low threshold to pain and are so psychologically constructed that they have difficulty in readjusting themselves to their infirmities.

#### ESSENTIAL HYPERTENSION

The sudden drops in systolic and diastolic blood pressure following the administration of spinal anesthetics<sup>30</sup> suggested the possibility that in the treatment of essential hypertension similar effects might be produced by operations that would denervate large vascular areas. Although the etiology of the disease is unknown, it is apparent that high blood pressure results from a fault in the neurovascular mechanism.<sup>31</sup> Hereditary<sup>32</sup> influences lend support to such a theory. It has been proved that suprarenal tumors, hyperthyroidism, eclampsia and numerous other lesions can produce an increase in pressure levels and also be responsible for sudden high rises above the mean pressure, which suggests that vasopressor substances within the blood are capable of producing an increased arterial tension. However, it has not definitely been proved that these substances act on the cerebral center alone or act on the musculature of the vascular system alone. Psychic factors and emotional stimuli are likewise capable of producing sudden peaks in the curve of blood pressure. These factors must either stimulate a vasomotor center or result in an excess secretion of vasopressor substances from the endocrine glands. Therefore, investigators have attacked the problem of essential

hypertension by operative procedures on the thyroid and suprarenal glands and on the vasomotor nerves, from the sixth thoracic to the second lumbar.

Total ablation of the thyroid gland, according to Cutler, does not reduce the pressures materially. Crile<sup>33</sup> stated that denervation of the suprarenal glands offers but slight relief. Extensive resection of the suprarenal glands, according to DeCourcy and his associates,<sup>34</sup> offers some amelioration in the symptoms, but there is always the danger of the patient developing Addison's disease if too extensive a resection is performed.

Section of the splanchnic nerves,<sup>35</sup> on both sides, whether performed above or below the diaphragm, has produced some satisfactory results, but such an operative procedure does not thoroughly denervate the splanchnic vessels nor does it remove all the innervation to the suprarenal glands, since ramuli from the first and second lumbar nerves carry vasomotor fibers to the splanchnic vessels and innervate the suprarenal glands. I<sup>36</sup> proposed a procedure that Craig and I as well as Page and Heuer<sup>37</sup> have employed, which consists of laminectomy and rhizotomy of the ventral roots on both sides from the sixth thoracic to the second lumbar nerves, inclusive. This procedure was designed to include all the vasomotor fibers passing through the splanchnic nerves and the remaining lumbar white ramuli of the lower end of the sympathetic thoracolumbar outflow, to interrupt all central vasoconstrictor impulses to the vessels below the diaphragm and also to interrupt all central nerve impulses to the suprarenal glands, thus creating a vascular reservoir and preventing the suprarenal glands from suddenly dumping additional epinephrine into the venous blood. This procedure has produced some very satisfactory results, but on account of the extensive nature of the operation I have attempted to produce the same effects by sectioning the splanchnic nerves and removing the first and second lumbar ganglions, with the intervening trunks, through a high kidney incision, with resection of the twelfth rib, exposing the structures retroperitoneally. I have also combined this operation with resection of half the suprarenal glands. These last procedures are divided into two operations carrying out resection of the splanchnic nerves, removal of the first and second lumbar sympathetic ganglions and resection of the suprarenal gland through one incision, and then performing a similar operation on the opposite side when the patient is thoroughly recovered from the first procedure. The results of the resection of the splanchnic nerves and removal of lumbar ganglions have apparently been just as effective as extensive rhizotomy.

**Selection of Cases**—Though our experience extends over a period of four years, Brown, Craig and I have learned that the best results are obtained with young

33 Crile George. Indications and Contraindications for Denervation of Adrenal Glands. *Ann Surg* 100: 667-669 (Oct.) 1934.

34 DeCourcy J. L. Subtotal Bilateral Adrenalectomy for Hyperadrenalism (Essential Hypertension). *Ann Surg* 100: 310-318 (Aug.) 1934. DeCourcy J. L. DeCourcy Carroll and Thoms Otto. Subtotal Bilateral Suprarenalectomy for Hypersuprarenalism (Essential Hypertension). *J A M A* 102: 1118-1122 (April 7) 1934.

35 Craig W. McK. and Brown G. E. Unilateral and Bilateral Resection of the Major and Minor Splanchnic Nerves. Its Effects in Cases of Essential Hypertension. *Arch Int Med* 54: 577-596 (Oct.) 1934. Peet Max. Personal communication to the author. *Pieri G* 1934. La resezione del nervi splanchnici. *Ann Ital di chir* 6: 678-684 (July) 1927. Rossi Ferdinando. La resezione del tronco simpatico toracico e dei nervi splanchnici nello spazium infradiaphragmatico posteriore. *Arch Ital di chir* 21: 729-740 1928. *abstr Zentralbl f Chir* 56: 1334 (May 25) 1929.

36 Adson, A. W. and Brown G. E. Malignant Hypertension. Report of Case Treated by Bilateral Section of Anterior Spinal Nerve Roots from the Sixth Thoracic to the Second Lumbar. *Inclusive J A M A* 102: 1115-1118 (April 7) 1934.

37 Page I. H. and Ifener G. J. A Surgical Treatment of Essential Hypertension. *J Clin Investigation* 14: 22-26 (Jan.) 1935.

18 Flothow P. G. Surgery of the Sympathetic Nervous System and Chronic Arthritis. *Northwest Med* 29: 518-522 (Nov.) 1930.

30 Emmett J. L. Subarachnoid Injections of Procaine Hydrochloride. The Quantitative Effects of Clinical Doses on Sensory Sympathetic and Motor Nerves. *J A M A* 102: 425-432 (Feb. 10) 1934.

31 Cannon Bradford. The Effects of Progressive Sympathectomy on Blood Pressure. *Am J Physiol* 97: 592-596 (July) 1931.

32 Hines E. A. Jr. and Brown G. E. A Standard Stimulus for Measuring Vasomotor Reactions. Its Application in the Study of Hypertension. *Proc Staff Meet Mayo Clin* 7: 332-335 (June 8) 1932.

patients less than 40 years of age who have a history of short duration and of slow progression of the disease. Examination of the retinas reveals fairly accurately the state and progressive nature of the disease. In the earlier cases, vasospasm of the retinal arteries can readily be demonstrated, while in the advanced stages sclerotic changes, retinal hemorrhages and choked disks appear. Incomplete results and failures have occurred when operations have been performed in the presence of irreparable injury to the heart and kidneys. The average mean drop in systolic blood pressure has been 44 mm of mercury, and a similar drop has been found in the diastolic pressure of 38 mm. The range of pressure levels and the high readings are materially lowered. The patients are promptly relieved of the violent headaches and cardiac discomfort on exertion.

#### RELIEF OF PAIN

As has been said, some of the relief of pain obtained in the treatment of peripheral vascular diseases is accomplished by interrupting afferent sensations which travel in fibers of the sympathetic group, whereas most of the relief undoubtedly comes from the restitution of diseased tissue. Occasionally an active neuritis is present which develops from ischemia of the nerve or a lesion of the nerve endings. When this occurs relief is not obtained by sympathectomy, and it is necessary in the milder cases to resort to section of sensory nerves and to an occasional amputation if chordotomy is not indicated.

**Dysmenorrhea**—This most often occurs from endocrine disturbance but occasionally results from a disturbance of the sympathetic nervous system.<sup>38</sup> When this is true, it occurs in the asthenic individual who frequently complains of vasomotor disturbance, and it has been found to be associated with Raynaud's disease. The relief obtained by resection of the superior hypogastric plexus or presacral nerves undoubtedly is due to three factors, namely, section of fibers carrying afferent sensations of pain, section of fibers carrying excessive stimuli to the muscles of the uterus, and section of vasomotor fibers, which results in an increase of the blood supply of the uterus.

**Selection of Cases**—Before advising and performing resection of the presacral nerves the patient is advised to have endocrine studies and treatment in order to relieve the menstrual pain. If this fails, a diagnostic dilation and curettage is indicated unless the uterus is infantile. When all medical measures fail, laparotomy is performed, in conjunction with a gynecologic surgeon, further to rule out lesions that might be responsible for the dysmenorrhea. If none are found the section of presacral nerves is performed, since it does not result in any postoperative sequelae nor does it interfere with pregnancy.

**Splanchnic Pain**—This phase of sympathetic surgery is still in the investigative stage.<sup>39</sup> These pains may result from lesions within the abdominal viscera which are not relieved by the usual abdominal operation. Procaine block anesthesia has been employed as a diagnostic procedure in an attempt to select cases for splanchnic nerve resection. If anesthesia of the splanchnic nerves

results in the sudden cessation of pain, one is justified in dividing them. I have operated in one such case, so far with excellent results, in which three operations had been performed for biliary disease and yet no stones nor active cholecystitis was found.

#### MOTOR IMBALANCES

**Congenital Megacolon, Hirschsprung's Disease**—Hirschsprung's disease is presumed to be of neurogenic origin,<sup>40</sup> and in this condition the mechanism for filling the intestine, namely, the colon and sigmoid, is more powerful and overbalances the emptying mechanism. Thus it is apparent that the sympathetic outflow of inhibitory muscular stimuli to the colon and contracting stimuli to the internal sphincter of the rectum are more powerful than the parasympathetic motor stimuli to the musculature of the colon and inhibitory stimuli to the internal sphincter of the anus. Defective parasympathetic innervation produces a similar effect, since the emptying stimuli would be less than the filling and retaining stimuli.

In both congenital and acquired megacolon, dilatation of the colon will be of high degree with thickening of all tunics especially the tunica muscularis, and with retention of large quantities of fecal matter. In Hirschsprung's disease the colon will be seen to be enlarged in a fusiform manner and there is no evidence of any obvious obstructing bands whereas in the acquired type of megacolon mechanical obstruction, in the form of bands, valvulae or adhesions is usually found to account for the dilatations and compensatory hypertrophy above the obstruction.

**Surgical Indications**—Surgical intervention that is sympathectomy, is not instituted in mild cases of Hirschsprung's disease in which medical treatment is adequate but when it becomes necessary for the patient to return to the hospital more than two or three times for emptying of the colon, or for the employment of a still more rigid regimen, sympathectomy is indicated.

**Scope of Operation**—In comparing the results following the various types of sympathectomy,<sup>41</sup> it becomes apparent that the more advanced the disease the more complete must be the resection of sympathetic fibers in order to produce the results desired.

This observation prompted me to increase the scope of the operation still further, and it now includes resection of both lumbar trunks including the second, third and fourth lumbar ganglions, with wide resection of the superior hypogastric plexus or presacral nerves which are situated on the promontory of the sacrum in the triangular space below the bifurcation of the abdominal aorta. This procedure is employed to include all the sympathetic fibers from the lumbar chain, all the intermesenteric fibers descending into the pelvis below the inferior mesenteric artery, and those fibers which rejoin the hypogastric plexus from the inferior mesenteric nerve in the mesocolon of the pelvis thus leaving only a small group of fasciculi which have followed the inferior mesenteric artery and its branches to the lower part of the colon and to the internal sphincter of the anus.

38. Adson A. W. and Masson J. C. Dysmenorrhea Relieved by Resection of Presacral Sympathetic Nerves. *J. A. M. A.* 102: 986-990 (March 31) 1934. Leriche and Fontaine.<sup>18</sup>

39. Davis Loyal Hart J. T. and Crain R. C. The Pathway for Visceral Afferent Impulses Within the Spinal Cord. 11. Experimental Division of the Biliary Ducts. *Surg. Gynec. & Obst.* 48: 647-651 (May) 1919. Scrimger F. A. C. On the Possibility of Relieving Visceral Pain by Section of the Sympathetic Rami Communicantes. *Canad. M. A. J.* 21: 184-189 (Aug.) 1929.

40. Adson A. W. The Results of Sympathectomy in the Treatment of Peripheral Vascular Disease. Hirschsprung's Disease and Cord Bladder. *Ann. Int. Med.* 6: 1044-1065 (Feb.) 1933. Judd E. S. and Adson A. W. Lumbar Sympathetic Ganglionectomy and Ramisection for Congenital Idiopathic Dilatation of the Colon. *Ann. Surg.* 88: 479-494 (Sept.) 1928. Calkell W. H. Further Researches on the Vaso-motor Nerves of Ordinary Mammals. *J. Physiol.* 2: 262-362 1878-79.

41. Rankin F. W. and Leamonth J. R. Section of the Sympathetic Nerves of the Distal Part of the Colon and the Rectum in the Treatment of Hirschsprung's Disease and Certain Types of Constipation. *Ann. Surg.* 62: 710-721 (Oct.) 1935.

## CORD BLADDER

Learmonth and Braasch<sup>42</sup> were the first to advocate presacral neurectomy for cord bladder and spasm of the neck of the urinary bladder. They based their contention on the fact that, when the bladder is incapable of emptying completely, as a result of injury to any portion of the parasympathetic pathway from traumatic myelitis, spinal meningitis, spina bifida or cord tumor, it seemed reasonable to suppose that the intact sympathetic contribution to vesical innervation<sup>43</sup> proved too effective a brake for the decreased parasympathetic innervation, Learmonth therefore resected the presacral sympathetic nerves in the hope of balancing the stimuli of emptying with those of urinary retention.

The same operation that was applicable to patients with urinary retention was applicable to those whose urinary flow was slow in starting as a result of spasm of the internal vesical sphincter, since the sympathetic system supplies the motor nerves to the sphincter muscles. Presacral neurectomy has become a useful procedure for both conditions. In the former it is essential that at least 50 per cent of the expulsive force be retained to assure a satisfactory result. This force can be determined by cystometric studies, cystoscopic examination, and the employment of acetylcholine and epinephrine. One would not advocate the operation for spasm of the vesical sphincter without the preliminary punch operation, since it frequently suffices to relieve the symptoms.

*Dilated Ureters*—When this condition results from spasm at the entrance of the ureters into the bladder, it has likewise been relieved by presacral neurectomy.

## POSTOPERATIVE CONVALESCENCE

The postoperative care and period of convalescence following the extensive forms of sympathectomy are similar to those following laparotomy. The mortality on the whole compares with that of simple appendectomy. The mortality is higher for thrombo-angitis obliterans than for other peripheral vascular diseases and averages 2 per cent. This is due to the fact that venous emboli have become dislodged and also to the fact that there is extension of the disease to the coronary vessels. Dryness of the skin always follows operations for the relief of vasomotor spasm of the extremities. This sequela is not a serious handicap, since it has been pointed out that daily application of a hydrous wool fat ointment or theobroma oil is sufficient to relieve the discomfort. Presacral neurectomies, extensive rhizotomies, and sections of the splanchnic nerves with removal of the two upper lumbar ganglions result in the paralysis of the urogenital trigon and interfere with the ejaculatory powers of the male, but they do not disturb potency or the libido. These procedures interfere with virility, but they do not necessarily cause sterility. The occasional imperfect result obtained in the treatment of vasospastic diseases is due to incomplete operation, and this occurs most frequently with cervicothoracic sympathectomy, since it is very easy to overlook accessory fibers<sup>44</sup>. Sympathetic ganglions should be removed in conjunction with section of post-

ganglionic rami whenever it is possible, for the preservation of the ganglion body with the postganglionic rami, even though the central connections have been severed, may have the property of exerting limited vasomotor influences. Horner's syndrome follows various forms of cervicothoracic sympathectomy, but the operation does not produce disfiguring symptoms when it is performed bilaterally.

## ABSTRACT OF DISCUSSION

ON PAPERS OF DRS KUNTZ, DAVIS AND POLLOCK,  
BROWN, JACKSON AND ADSON

DR. W. J. MERLE SCOTT, Rochester, N. Y. I think that from the clinical standpoint, the central problem in this field with regard to the surgical attack on the autonomic nervous system is the working out of tests that will tell exactly, in advance of any operation or any other therapeutic measure, just what the relationship of the autonomic nervous system to the syndrome at hand is. The working out of these tests has given information that has raised problems that it has not been possible to clear up exactly, but it has added a great deal to the appreciation of the difficulties. Surgery in this field is experimental if by that phrase is meant that one doesn't know exactly what will be accomplished by the measure one is adopting. The experiment is primarily not that of the surgeon but that of nature. Essential hypertension will ordinarily kill the patient within three to five years, and, if a measure is available that will offer any degree of hope for these patients, I think that one is not only justified but also obligated to see what can be done with that measure.

DR. IRVING S. WRIGHT, New York. In tests for the determination of the degree of vasodilatation or vasoconstriction obtainable, the extent of temperature change depends largely on the temperature level before the experiment. It is important to recognize this because of the numerous charts that are published, through which the point is made that a rise of 1° or 15 degrees Fahrenheit is obtained by a given experiment. Patients may be stabilized at from 68 to 93 F (temperature at finger tips), and naturally it is impossible to obtain as spectacular results in the way of dilatation from the individual who begins at the higher level. Dr. Charles Poindexter and I have been studying the reaction following the ingestion of alcohol, similar to the previous tobacco studies from our laboratory. One observation of considerable interest is that there are certain individuals who may ingest a given amount of alcohol without any evidences of vasodilatation, in whom the further addition of a relatively small amount of alcohol may produce as complete a dilatation as is obtainable without induction of fever. We have never obtained a temperature at the finger tips of more than 94 F without fever (room temperature). It is important, therefore, when using alcohol in tests of vasodilatation, to keep in mind that certain individuals have a higher tolerance point that must be exceeded before any effect can be noted. The problem of surgery of the sympathetic nervous system is certainly an open question. We have had an opportunity to study, over a fairly protracted period of time, a number of the patients on whom ganglionectomy has been done for a variety of conditions. Even in the much advocated field of Raynaud's disease and scleroderma, certain patients show no improvement, and at the end of a year many are as badly off as if the disease had taken its usual course. In addition, the patient has been subjected to a very extensive operative procedure, with an average mortality of 4 per cent. In cases of scleroderma when the back is even slightly involved, we have seen draining postoperative sinuses that have never healed. Our patients have been operated on by some of the outstanding advocates of surgery in this field. I should like to urge that the advocates of this type of operation for such a wide variety of conditions should continue to consider it an experimental procedure.

DR. JAMES C. WHITE, Boston. I have never had a failure to date, after lumbar ganglionectomy for Raynaud's disease, but I think that many surgeons who have carried out complete sympathetic denervations of the upper extremity have seen

42 Learmonth J. R. *Neurosurgery in the Treatment of Diseases of the Urinary Bladder. III. The Treatment of Certain Types of Vesical Paralysis.* J. Urol. 26:229-232 (Aug.) 1931. Learmonth J. R. and Braasch W. F. *Resection of the Presacral Nerve in the Treatment of Cord Bladder.* Preliminary Report Surg. Gynec. & Obst. 51:494-499 (Oct.) 1930.

43 Elliott T. R. *The Innervation of the Bladder and Urethra.* J. Physiol. 35:367-445, 1907.

44 Kuntz, Albert. *Distribution of the Sympathetic Rami to the Brachial Plexus. Its Relation to Sympathectomy Affecting the Upper Extremity.* Arch. Surg. 15:871-877 (Dec.) 1927.

hands that still got cold and blue afterward. In this connection Drs. Smithwick, Freeman and I have thought of the fact, long known to physiologists, that denervated smooth muscle becomes sensitive to circulating hormones of the type of epinephrine and sympathin. If the iris in a cat's eye is denervated on one side only, a dose of epinephrine can be given that will have no effect on the normal eye but will cause wide pupillary dilatation and retraction of the nictitating membrane on the operated side. Tests were made on patients who had had sympathetic ganglionectomy with physiologic doses of epinephrine in a dilution of 1:250,000. These patients developed a clear-cut vasospasm. The same thing happens in the denervated rabbits' ear whenever the animal is excited and can be eliminated if the adrenals are inactivated. This physiologic response to epinephrine is one cause of the failures that all know exist. This effect is twice as marked in the arm as it is in the leg. In the leg it plays no clinical role, but in the arm it is a really important factor. In the relation of neurosurgery to visceral pain our particular problem has been that of angina pectoris, and three years ago with Drs. Garrey and Atkins I tested out all the possible neurosurgical procedures for the control of cardiac pain in dogs. We found that section of both vagi had no effect and like Dr. Davis, that section of the intercostal nerves peripheral to the sympathetic rami would not stop that type of pain. Section of the upper five pairs of posterior roots or bilateral destruction of the upper four thoracic sympathetic ganglions would stop it. We have used these procedures on forty-five patients and in every one in whom these fibers have been interrupted, either by alcohol injection, by ganglionectomy or by posterior root section the pain has disappeared. I am convinced that relief of visceral pain is due to direct interruption of visceral afferent neurons which belong to the somatic system of nerves but which traverse the sympathetic trunks.

DR. E. L. JONES, Cumberland, Md. I have been working in other sections for many years, and this fact fits in so nicely with everything that the physiologists are doing along the autonomic nervous system that I thought it would be given consideration in your field. There is a station of the autonomic system that goes into the eye, terminating in the ciliary muscle, the focusing muscle of the eye and all manner of interferences with the free working of the autonomic nervous system can creep in through any station that puts it in contact with disturbing factors.

DR. CHARLES W. GREENE, Columbia, Mo. I want to make some comparisons dealing with concrete autonomic coordinations of the coronary blood vessels and the heart that seem to be apropos. In Dr. Kuntz's diagram showing the nerves of the heart he gave only the general detail, but I have been working that field through new experiments announced in only a preliminary way. A diagram shows the spread of the autonomic pathways of the neurons from the central axis through the sympathetic ganglions to the heart. Dr. Kuntz made a good point that the ratio of spread runs in the neighborhood of one preganglionic neuron to thirty or more postganglionic neurons. I have found that the efferent accelerator and the coronary dilator pathways run as high as the superior cervical ganglions and as low as the sixth dorsal neither of which has previously been shown for the coronary control. The nerves of the cardiac plexus are mixed nerves, in the upper branches consisting of cardiac accelerators and coronary dilators and also inhibitor and coronary constrictor nerve fibers. Apropos of the classifications Dr. Kuntz is using if vagosection is applied and degeneration obtained in this pathway, the inhibitor fibers can no longer be demonstrated physiologically nor can the coronary constrictor fibers showing obviously that these are of the vago-anatomic group which anatomically should be considered parasympathetic. But these coronary constrictor fibers are not eliminated by atropine. They bear none of the usual earmarks of anything but thoracic vasoconstrictors. So I challenge the determination that one is dealing with parasympathetics. They have the physiologic characteristics of thoracic sympathetics even though they run in a parasympathetic trunk, the vagus. Naturally I take the physiologic basis of classification. Coronary dilatation on stimulating the peripheral right cervical vago-sympathetic, the

ordinary effect of stimulating the superior cardiac nerve, showing coronary constriction before vagal operation, and dilatation after vagus degeneration—evidently a mixed pathway—can be demonstrated. A reflex dilatation of the coronaries occurs with not much change in blood pressure from sciatic stimulation. On stimulation of the splanchnic area there is a very remarkable reflex coronary dilatation. If the afferent fibers of the vago-sympathetic containing sensory neurons arising in the lower thoracic region are stimulated, a reflex coronary dilatation occurs. Delicate reflex control of the coronaries rests on a richly developed autonomic mechanism.

DR. ALBERT KUNTZ, St. Louis. The terms "autonomic," "sympathetic" and "parasympathetic" were supplied by Langley based on physiologic observations. These divisions have been found to be useful anatomically, and I think that at present they are more useful anatomically than physiologically. Dr. Greene has just pointed out that certain of the fibers to the heart which are included in the sympathetic supply act as though they were parasympathetic. The same thing could be pointed out in the vasomotor nerves to the peripheral vessels. The sympathetic vasomotor supply, as has been shown so clearly by Sir Thomas Lewis, contains both vasoconstrictors and vasodilators. These vasodilators always act as though they were parasympathetic. The vasoconstrictors are definitely adrenergic if one wants to use such a term and the vasodilators are cholinergic. Here one has the distinction between these two types physiologically, but the two divisions sympathetic and parasympathetic can no longer be kept distinct on a physiologic basis. I would still plead for these divisions, however, as good anatomic divisions even though they did come from the physiologists. I would also point out that the literature would be much clearer if one terminology should be used and if afferent pathways were excluded from the autonomic system. It has been pointed out today that afferent pathways leading into the central nervous system may be very intimately associated with autonomic nerves, but they are cerebrospinal components.

DR. GEORGE E. BROWN, Rochester, Minn. Whether vasodilatation is maintained and is persistent after sympathetic ganglionectomy and whether abolition of sweating gives misleading information on the increase in surface temperature can be answered with a good deal of assurance. Absence of sweating may be a factor but there are other methods available for determining vasodilatation that seem conclusive. The rate of heat elimination, as determined by the hand or foot calorimeter gives indirectly the volume flow of blood through the extremity. It has been shown with this method that huge increases in the rate of heat elimination and volume flow of blood are demonstrable in the sympathetomized limb years after the sympathetic ganglions are removed. The thermistorium method of Rein as used in experimental studies by Drs. Herick, Baldes and Essex, has indicated that the flow of blood in the femoral artery of the sympathetomized limb is 100 per cent or more greater than that in the femoral artery of the intact side. This increase was found a year after operation. After all the clinical evidence is just as conclusive the maintenance of hot dry extremities which have been observed as long as ten years after this operation, seems incontrovertible.

DR. ALFRED W. ANDERSON, Rochester, Minn. I hoped that I had made it clear that none of our patients are submitted to sympathectomy without careful study in the medical departments. The study includes the routine examination and additional special examinations that have been devised to determine smooth muscle imbalances and vasomotor disturbances. These patients are not advised to undergo operative treatment unless medical measures are inadequate or unless the surgical results are known to exceed those obtained by medical treatment. I therefore believe that one is justified in advising and performing sympathectomy for Raynaud's disease, thrombo-angiitis obliterans, selected cases of scleroderma, rheumatoid arthritis of the smaller joints, Hirschsprung's disease, selected cases of cord bladder and dysmenorrhea and essential hypertension. There are numerous other diseases that are under investigation and may ultimately be included in the group which are either materially improved or cured by sympathetic procedures. The whole field of the more recent extensive forms of sympathetic

tomy is still in its infancy. Postoperative observations may be changed as the survival period increases, which, if it does, will alter the surgical indications and the selection of cases. Close cooperation between laboratory investigators, clinicians and neurosurgeons is imperative in order to make the best selection of cases for surgery and to evaluate accurately the results obtained, whether they are failures or successes.

## ASBESTOSIS

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Asbestosis is a pneumoconiosis caused by the inhalation of asbestos dust. It is distinct from silicosis in its pathology and clinically. Whether asbestosis will remain a distinct form of pulmonary dust disease or will prove to be of a type common to a number of dusts remains to be seen. So far, it is the only pneumoconiosis, other than silicosis, that has received any considerable amount of study from pathologists, clinicians and industrial hygienists.

Whereas silicosis has been recognized for many centuries, asbestosis is a newcomer. Asbestos (Canadian) is a hydrated magnesium silicate containing no free silica but about 44 per cent of combined silica, 43 per cent magnesium, nearly 13 per cent of water, and traces of iron and nickel. While asbestos was known to the ancients, the fabricating of asbestos on a large scale is comparatively new; it received a tremendous impetus from its use in connection with automobiles and as an insulating material and a heat resistant for a great variety of mechanical purposes.

While Hoffman<sup>1</sup> called attention to the possible harmfulness of asbestos dust in 1918, it was not until February 1927 that asbestosis was, so to speak, officially recognized in this country by the filing of a disability claim for workmen's compensation in Massachusetts. The claimant was a foreman in the weaving department of an asbestos plant, and the claim was upheld by the Massachusetts Industrial Accident Board. This was twenty-seven years after the first fatal case was reported in England by Dr. Montague Murray. In 1910 and again in 1934 a fatal case was reported in England, and in 1928 the British Factory Department conducted an investigation and enacted laws for the protection and compensation of the worker against this hazard. The whole subject in England has been summarized by Merewether.<sup>2</sup> At the present time, as nearly as can be estimated, there are about 12,000 individuals employed in the chief asbestos plants in the United States, of whom 10,000 might be exposed to asbestos dust.

In 1927 a fatal case of uncomplicated asbestosis was reported to the Medical Society of South Carolina,<sup>3</sup> and since then, including this case, there have been eleven fatal cases reported in the United States, eight uncomplicated and three complicated by tuberculosis. These reports, together with the fact that asbestosis figured in the extraordinary occupational disease litigation that has spread over this country, resulted in both laboratory and field studies of this new hazard. Gard-

ner and Cummings<sup>4</sup> at Saranac Lake, N. Y., commenced animal experimentation with asbestos in 1928 and reported their observations in 1931. These two authorities in the United States and Gloyne<sup>5</sup> in England have described the pathology. While silicosis is predominantly parenchymatous, asbestosis is mainly interstitial, nor is asbestosis characterized by the nodular formation so distinctive of silicosis.

A search of all the death records on file in the Metropolitan Life Insurance Company revealed that asbestosis had been given as a cause or contributing cause of death in only nineteen cases. The first case noted was in 1924; there were two in 1927, one occurred in 1931, and the rest have occurred since 1933. The diagnosis was supported by autopsy in only six. In one of the six the primary cause of death was carcinoma, in another glioma of the brain, and in another pulmonary tuberculosis. In the other three asbestosis was given as the primary cause, with cardiac failure as the contributing cause. Some of these cases were reported in the literature.

Asbestosis complicated by heart disease was given as the cause of death in seven cases. There were no autopsies in these seven and pulmonary tuberculosis was diagnosed in several by the attending physician, so perhaps too much weight cannot be given to these certificates.

Diabetes and pulmonary tuberculosis were also mentioned in the remaining six cases, in which there were no autopsies. All nineteen patients were males and with one exception all were white.

In our studies of asbestos mines and fabricating plants,<sup>6</sup> the clinical picture of asbestosis was milder than that of silicosis. To be sure, the individual patient with marked asbestosis will greatly resemble the individual with silicosis. There is the same dyspnea on exertion, the same dry cough, and the more or less indefinite physical signs elicited by the stethoscope. The patient with asbestosis is apt to have clubbed fingers—not usually seen in silicosis—and he is apt to be pasty faced and even show a slight cyanosis, while the silicotic patient is apt to be fairly robust looking. Of course in each instance I refer to patients whose disease is not complicated by infection.

We did not find in communities in which asbestos was mined or fabricated the familiar picture of disability and tuberculous infection so characteristic of hard rock mining communities. Our observations were supported by the statements of physicians practicing in these communities. All the patients with asbestosis that we detected were, with one exception, working steadily at their trades. In only one case did we find evidence of active tuberculosis and that diagnosis was based only on the roentgen appearance. Several showed healed tuberculosis. Gardner and Cummings in their report called attention to the difference between the action of asbestos dust and silica dust in relation to tubercle infection in experimental animals, and their observations tend to bear out our clinical study.

In all, our clinical data are based on 126 physical examinations of asbestos workers all of whom had more than three years' exposure and who were selected at random. Sixty-three of these presented a roentgen appearance which we thought indicated a pneumocon-

4 Gardner L. U. and Cummings D. E. Studies on Experimental Pneumoconiosis. VI. Inhalation of Asbestos Dust. Its Effect on Primary Tuberculous Infection. *J. Indust. Hyg.* 13: 65 (Feb.) 1931.  
5 Gloyne S. R. The Morbid Anatomy and Histology of Asbestosis. *Tubercle* 14: 445 (July) 1933; 493 (Aug.) 550 (Sept.) 1933.  
6 Lanza A. J., McConnell W. J. and Fehnel J. W. Effects of the Inhalation of Asbestos Dust on the Lungs of Asbestos Workers. *Pub. Health Rep.* 50: 1 (Jan. 4) 1935.

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1 Hoffman F. L. Mortality from Respiratory Diseases in Dusty Trades. *Bull. 231 U. S. Department of Labor* June 1918.

2 Merewether E. R. A. A Memorandum on Asbestosis. *Tubercle* 15: 69 (Nov.) 109 (Dec.) 1933; 15: 152 (Jan.) 1934.

3 Lynch K. M. and Smith W. A. Pulmonary Asbestosis. *Am. Rev. Tuberc.* 23: 643 (June) 1931.



osis, but the symptoms were indefinite and inconclusive. We called these cases first stage. Four presenting evident pulmonary symptoms and corroborative roentgenograms, we termed second stage. Of these sixty-seven patients, twenty had been exposed more than ten years and thirteen more than fifteen years. We are still continuing our asbestos studies and hope to secure additional information on the time element in development and the tendency and rate of progress.

One feature that has impressed us is that the British investigators found asbestosis more severe and more menacing than we did. This difference may be more apparent than real, but it is possible that the English factories may be more dusty than ours. There were not available any comparative dust counts, but this impression is based on their reports and on statements made to myself and my colleagues by persons familiar with the English conditions. One process, described in the British reports as 'mattress making' and stated to be extremely dusty, does not appear to have a counterpart in this country. In both countries, energetic steps have been taken to control the dust hazard in asbestos plants, so that it is probable that further cases of disabling asbestosis will be rare.

As in silicosis, the diagnosis centers on the roentgenogram. However, the whole matter of attempting to interpret these films and correlate them with the clinical evidence, if any, is difficult and elusive. If, in our studies, we had found a more clear-cut and severe type of pneumoconiosis with marked symptoms and disability as well as a distinctive roentgen appearance such as my colleagues and myself had been accustomed to find in our previous investigations of silicosis, our task in attempting to make a positive diagnosis and estimate the extent of the disease would have been easier. There is no doubt that, especially in the beginning, we were handicapped by endeavoring to evaluate asbestosis with a silicosis foot rule.

The x-ray appearances are not clear cut or distinctive as in silicosis and do not lend themselves to ready grouping into progressive stages. There are less evident pathologic changes in these films and the shadows are finer, more granular and softer than in silicosis. The asbestosis film gives the impression of ground glass and there is no nodulation with the consequent tendency of the nodules to coalesce and give dense opaque areas in the films. The distribution of the shadows is somewhat different, occupying the lower third of the lung except in far advanced cases, when the shadows may occupy the major portion of the lung. We noticed frequently the well marked outline of the interlobar septum on the right side. We also noticed that a number of films in cases of asbestosis showed enlarged hearts, and this might be expected when one considers that the pathologic process tends to constrict the pulmonary blood vessels as they ramify along with the bronchioles.

It is possible that the x-ray appearance of asbestosis may not be distinctive of this disease alone but uniform in appearance with pneumoconiosis due to other silicate dusts. Much more investigation and study of roentgenograms of industrial workers exposed to all sorts of silicate and other dusts are needed before it will be possible to speak definitely on this, the most important phase of the diagnosis of pneumoconiosis.

One thing is certain. The utmost care and patience are needed to elicit the occupational history of the

patient and to correlate this and the clinical picture with the roentgenogram before a diagnosis of asbestosis is justified. As noted in relation to other occupational health hazards, there is an all too frequent tendency to make a diagnosis of a specific occupational disease because of presumptive or actual exposure without the corroboration of other essential factors to a correct diagnosis. One is not justified in making a diagnosis of asbestosis any more than of silicosis in the presence of a roentgenogram showing no distinctive pulmonary pathologic changes.

Associated with exposure to asbestos dust is the occurrence in the sputum and pulmonary tissues of a peculiar formation known as asbestos bodies. These asbestos bodies have been described by a number of observers and are due apparently to the action of the tissues on the asbestos fiber. Their exact significance is doubtful, but it is commonly agreed at the present time that they are not diagnostic of pulmonary fibrosis and indicate merely that the individual has been exposed to asbestos dust.<sup>8</sup> Some observers believe that, when these asbestos bodies appear in the sputum in clumps, they indicate actual disintegration of lung tissue.

Dr. Miller<sup>9</sup> of the United States Public Health Service describes the technic that he employs in the intraperitoneal injection of finely divided dusts in a state of suspension. Miller defined three types of reaction: absorptive, inert and proliferative. The first is produced by relatively harmless or inactive dusts, the second by dusts that might cause pulmonary fibrosis, and the third as the typical reaction of silicosis. Recently Miller<sup>10</sup> described the effects of the injection of three varieties of asbestos, namely, chrysotile, crocidolite and amosite. Chrysotile is Canadian asbestos and, as previously stated, is largely magnesium silicate. Crocidolite and amosite contain only a small quantity of magnesium, containing instead iron silicate in approximately the same quantity.

The three types of asbestos produced the same type of reaction, namely, the one described by this investigator as inert. He states:

We have been assuming that the dusts producing this inert reaction cause pneumoconiosis of the diffuse fibrosis type as distinct from the proliferative reacting dusts which cause nodular fibrosis. This assumption, as you know, has not been proven by corresponding animal experiments with the same dusts, but results from observation of pathologic material from autopsies.

I believe that the gross behavior of asbestos in the tissues has further strengthened the value of our classification of dusts and the intraperitoneal test as a means of determining the harmful dusts by its clinical correlation.

Much work remains to be done before asbestosis is spoken of as authoritatively as is silicosis. In the meantime asbestos plants are being cleaned up and the dust is being controlled. This together with the smaller number of persons employed implies that there will probably never be the wealth of clinical material that has been available in silicosis. It is by no means certain that asbestosis progresses as does silicosis after withdrawal from dust exposure nor does infection seem to be as closely and intimately associated with asbestosis as with silicosis. The answer to these and other problems resulting from exposure to silicate dusts demands further study both in the field and in the laboratory.

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<sup>8</sup> Merewether, Wood, W. B. and Cloyne, S. R. Pulmonary Asbestosis. *Lancet* 2: 1343 (Dec. 22) 1934.

<sup>9</sup> Miller, J. W. and Sayer, R. R. The Physiological Response of the Peritoneal Tissue to Dusts Introduced as Foreign Bodies. *Pub. Health Rep.* 49: 80 (Jan. 19) 1934.

<sup>10</sup> Miller, J. W. Personal communication to the author.

<sup>\*</sup> Dubrow, J. L. in discussion on McCann, W. S., Hurtado, Alberto, Kalfreider, Nolan and Fray, W. W. The Estimation of Functional Activity in the Pulmonary Fibroses. *J. A. M. A.* 103: 810 (Sept. 15) 1934.

# BIOLOGIC EFFECTS OF PINEAL EXTRACT (HANSON)

AMPLIFICATION OF EFFECTS IN THE YOUNG  
RESULTING FROM THE TREATMENT OF  
SUCCESSIVE GENERATIONS OF  
PARENT RATS

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Because of the pathognomonic syndrome observed in young individuals affected with pineal tumors, clinicians are always keenly interested to learn something new concerning the function of the pineal gland. To date, however, this has remained one of nature's best guarded secrets.

This gland has been known since ancient times. Galen wrote "It is in substance glandular. It was devised for the same purpose as other glands of the body." Descartes regarded it as the seat of the soul. In some lizards it becomes highly specialized and may have functioned at times as a rudimentary eye. Modern science has met with but meager success in the study of this gland and left us still in doubt as to whether the pineal gland is a vestigial structure or a functioning endocrine gland. Excellent collective reviews have been presented by McCord<sup>1</sup> in 1917 and Andersen and Wolf<sup>2</sup> in 1934.

In human beings the pineal gland is a cone-shaped structure on the superior colliculi of the corpus callosum. It develops in size during childhood until the age of 7 (or possibly puberty), at which time it undergoes some form of involution. It attains a weight of from 0.10 to 0.15 Gm. It persists throughout life and in late years is filled with "brain sand." It is not essential to life.

According to Bailey<sup>3</sup> the pineal body is attached by a short stalk to the posterior boundary of the dorsal surface of the third ventricle. It rests on the midbrain, is dark red and measures about 6 mm. long and 4 mm. broad. Careful studies have failed to reveal any sex difference.<sup>4</sup> It makes its first appearance during the fourth or fifth week of development as an outpouching of the roof of the diencephalon. It is formed first of ependyma only, but the walls soon thicken and mesodermal elements become included. It develops from ectoderm that possesses sensory rather than internal secretory potencies. In the fully developed condition the pineal body consists of scattered ependymal cells in a framework of neuroglia and connective tissues. The ependymal cells tend to be ranged in lobules. Within

the lobules cystlike structures may be recognized and a variable amount of acervulus, or brain sand, is encountered. They contain a good deal of pigment, as well as some lipid inclusions and typical mitochondria. No secretion antecedents have been found.

Biologic studies on the pineal gland have concerned themselves chiefly with the effects in various types of small animals of extirpation of the gland, feeding experiments, transplants and the administration of various forms of pineal extract. Pinelectomy in the hands of many investigators has led consistently to negative results in the rat,<sup>5</sup> in the rabbit,<sup>6</sup> in the dog<sup>7</sup> and in the chick.<sup>8</sup> On the other hand, positive results have been claimed in the rat by Izawa<sup>9</sup> and Yohoh,<sup>10</sup> in the guinea-pig by Horrax<sup>5</sup> and Clemente,<sup>11</sup> in the rabbit by Clemente,<sup>11</sup> in the dog by Sarteschi,<sup>12</sup> and in the chick by many workers.<sup>13</sup> The most common result of pinelectomy is said to be "premature development of secondary sex characters in the male, enlargement of the gonads, overgrowth of the body and obesity." Andersen and Wolf,<sup>2</sup> after a critical analysis of the several papers submitted, expressed the opinion that, generally speaking, the data submitted do not justify the conclusions reached.

Feeding experiments have been carried out by McCord<sup>1</sup> on 400 young animals, using fresh pineal glands, with resulting early precocity and adiposity. Hoskins's<sup>4</sup> results in experiments on small animals were almost completely negative.

Implantation of the pineal gland has been attempted in chicks with negative results by Kozelka.<sup>14</sup> Increased rate of growth in rabbits has been claimed by Dubowik.<sup>15</sup> In the rat Lahr<sup>16</sup> found no influence on body growth of either sex but retardation of gonadal development in both male and female.

Injection of pineal extract was tried by VonCyon<sup>17</sup>, Howell,<sup>18</sup> Boese and Exner,<sup>19</sup> Dana and Berkeley,<sup>20</sup> Fenger<sup>21</sup> and Cushing,<sup>22</sup> all with negative results. Immediate pharmacologic effects in the nature of lowered blood pressure were noted by Jordan and Eyster,<sup>23</sup> Horrax,<sup>5</sup> and Dixon and Halliburton.<sup>24</sup> The latest contribution to the subject is from Engel. He has found an antagonism of pineal extracts toward

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- 27 Jordan H. E. and Eyster J. A. E. The Physiologic Action of Extracts of the Pineal Body Am J Physiol 29:115 1911.
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2 Andersen D. H. and Wolf A. J. Physiol 81:49 (March) 1934.

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5 Hoskins E. R. The Tides of Life New York W. W. Norton & Co. 1933 p 236.

the growth hormone of the anterior lobe of the hypophysis and toward the hormone affecting lutemization and maturation of the follicles

McCord<sup>1</sup> called attention to the effect of pineal extracts on the melanophores, the production of silver colored tadpoles and the increased rate of multiplication of paramecia, results concurred in by Adair and Chidester<sup>2</sup> McCord<sup>1</sup> further called attention to the

are seen at times, and very often the clinical picture of hydrocephalus develops, leading to general signs of compression. Finally there is the syndrome supposedly pathognomonic of pineal tumor, the pineal endocrine manifestations consisting of overgrowth, mental precocity, precocious sexual development and macrogenitosomia praecox as evidenced by enlargement of the penis and testes the early appearance of pubic and axillary hair change in the voice and early gonadal functions (erections and the like). The clinical manifestations of adiposity polyuria polydipsia and drowsiness are usually considered as secondary hypopituitary states. It is of interest that the specific pineal endocrine features seem to be largely confined to the male. Originally thought to be confined to teratomas they are encountered in types of pineal tumors diagnosed as sarcomas gliomas psammomas carcinomas and cysts.

The cause of the precocious sexual development, according to Bailey and Jelliffe,<sup>30</sup> who have made a comprehensive study of pineal tumors is not evident. Thus Oesterich and Slawyk<sup>31</sup> are inclined to regard it as evidence of hyperpinealism in just the same sense that acromegaly is the result of an excess of pituitary hormone. In this connection Askanaiz<sup>32</sup> believes that an increase in pineal secretory function might well be expected in teratomas originating in the pineal body. Others however regard these clinical manifestations as evidence of hypopinealism.<sup>33</sup> It has further been suggested that mechanical pressure may be the responsible factor, and that precocious sexual development may be an 'early irritative sign of a purely nervous character, acting through the pars nervosa sympathetic system.' Cushing<sup>22</sup> assumes that dyspituitarism resulting from pressure on the infundibulum might explain the sexual changes.

From the foregoing it is evident that unanimity of opinion is lacking relative to the role of the pineal gland in biology and to the part it is playing in the clinical picture in tumors of this gland. One group believes that the pineal gland produces a secretion which inhibits

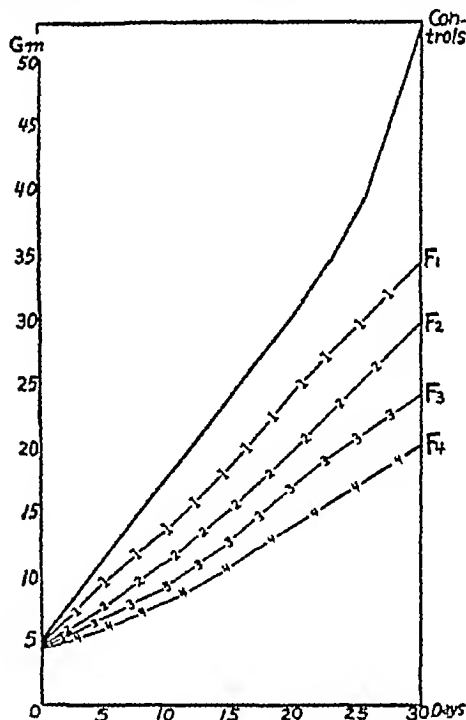


Fig. 1—The number of rats constituting the basis for the weight curves is as follows: for the controls 301 rats for the F<sub>1</sub> generation 138 rats for the F<sub>2</sub> generation 543 rats for the F<sub>3</sub> generation 155 rats for the F<sub>4</sub> generation 41 rats

paradox appearing in the literature namely that extirpation of the gland leads to "precocity of development," while the administration of the pineal gland in excess to the young leads essentially to the same result by hastening growth and sexual maturity.

#### CLINICAL CONSIDERATIONS

The clinical aspects of the pineal gland are of peculiar interest. The possibilities of a specific pathognomonic pineal endocrine clinical picture in tumors of this gland was first suggested by Frankl-Hochwart<sup>28</sup> and developed by Marburg<sup>29</sup> and Pellizzi<sup>30</sup>. It is now a fairly well established clinical entity, but the significance of the so-called endocrine feature is not at all clear. Pineal tumors are usually associated with general signs of compression neighborhood manifestations and at times the so-called endocrine picture. The signs and symptoms of generally increased intracranial pressure are headache vomiting convulsions and the like. The localizing neighborhood neurologic manifestations result mostly from encroachment on the quadrigeminal bodies leading to pupillary changes and strabismus the effects of pressure on the cerebellar and pyramidal tract



Fig. 2—Comparative size of control rat (at left) and rat under pineal treatment (at right). The control rat aged 14 days weighs 31 Gm the fifth generation of rat under pineal treatment same age weighs 9 Gm

the growth of the body and restrains mental and sexual development while others especially McCord<sup>1</sup> have contended that the pineal gland stimulates growth and

<sup>6</sup> Adair J. and Chidester F. E. The Influence of Pineal Feed ing upon the Rate of Metamorphosis in Frogs. *Endocrinology* 12: 791 (Nov. Dec.) 1928.

<sup>28</sup> Frankl-Hochwart. *Leber Diagnose der Zirbeldrüsenumoren*. Deutsche Zeitschr. f. Nervenh. 3: 455 1909.

<sup>29</sup> Marburg O. Die Klinik der Zirbeldrüsenerkrankungen. *Ergebn. d. allg. Med. u. Kinderh.* 10: 146 1913.

<sup>30</sup> Pellizzi G. B. *Riv. ital. di neuropat.* 3: 193 1910. *Lavori d. Istit. di clin. med. d. r. Univ. di Pisa* 2, 1910.

<sup>30</sup> Bailey Pearce and Jelliffe S. E. Tumors of the Pineal Body. *Arch. Int. Med.* 9: 851 (Dec. 15) 1911.

<sup>31</sup> Oesterich and Slawyk. *Riesenwuchs und Zirbeldrüsengeschwulst*. *Arch. f. path. Anat.* 157: 4-5 1909.

<sup>32</sup> Askanaiz. *Teratoma und Chorioid epithelium der Zirbeldrüse*. *Verhandl. d. deutsch. path. Gesellsch.* 1906: 1 1908.

<sup>33</sup> Pellizzi G. B. *Schüller A. Handb. der Neurol.* 4: 13- 1913. Frankl-Hochwart.

also sexual and physical precocity. On the clinical side one group ascribes the endocrine feature of pineal tumors to underfunction and the other to overactivity of the gland.

EFFECTS OF ADMINISTRATION OF PINEAL EXTRACT  
(HANSON) THROUGH SUCCESSIVE GENERA-  
TIONS OF RATS

The success attending our studies with the continuous administration of thymus extract (Hanson) to successive generations of parent rats, resulting in the remarkable precocity in the offspring in the third and succeeding generations led us to attempt the same procedure with an extract of the pineal gland. A small colony of four pairs of albino rats (Wistar strain) was started on pineal extract, March 2, 1934. Test animals have been subjected to date to 1 cc daily of pineal extract intraperitoneally, even during periods of pregnancy and lactation. Offspring born to these rats have been mated in pairs, and these likewise have been so treated and the effects of pineal extract on parents and offspring noted. The procedure has resulted in a definite effect on the rate of growth and development in the offspring, the effect becoming more pronounced as each succeeding generation is born to treated parents.

The extract employed most frequently (PB<sub>20</sub>) was one of several prepared by Hanson. It represents an

*Progressive Development Under Pineal Treatment*

| Controls       | Lars<br>Opened                        | Teeth<br>Erupted | Fur<br>Appeared | Eyes<br>Opened  | Testes<br>Descended | Vagina<br>Opened |
|----------------|---------------------------------------|------------------|-----------------|-----------------|---------------------|------------------|
|                | $\frac{1}{2}$ -3 $\frac{1}{2}$<br>(8) | 8-10<br>(9 0)    | 16<br>(16 0)    | 14-17<br>(15.5) | 31-40<br>(38)       | 50-72<br>(63)    |
| F <sub>1</sub> | 2-3<br>(3.3)                          | 8-10<br>(9 0)    | 7-16<br>(13 0)  | 12-17<br>(14.5) | 12-36<br>(22 0)     | 29-36<br>(45 0)  |
| F <sub>2</sub> | 2-3<br>(2.5)                          | 7-11<br>(9 0)    | 6-17<br>(12 0)  | 12 16<br>(13.8) | 6-36<br>(15 0)      | 30-39<br>(37 0)  |
| F <sub>3</sub> | 2-3<br>(2.5)                          | 5-8<br>(6.5)     | 5-12<br>(9 0)   | 5-13<br>(9.8)   | 5-12<br>(10 0)      | 29-39<br>(32 0)  |
| F <sub>4</sub> | 1-2<br>(2 0)                          | 3-5<br>(4 0)     | 4-8<br>(5 0)    | 4-8<br>(6 0)    | 4-6<br>(5 0)        | 23-26<br>(24 0)  |

aqueous acid derivative probably in the form of a picric acid, and containing 0.21 per cent free trinitrophenol (picric acid). It is relatively nontoxic but somewhat irritant locally. One cannot however escape the impression that it is somewhat of a deterrent to the general good health of the rats in the experiments herein described. To date more refined extracts seem to lack the activity apparent in PB<sub>20</sub>. Further studies in this field are in progress.

To date five successive generations of the pineal strain of rats have been under observation. An analysis of the biologic data of each of these generations reveals several significant facts. In the first generation no effect is apparent other than moderate loss of weight phenomena suggestive of sex excitation as increased size of penis, and early breeding. In the second generation there is definite retardation in growth with mild precocity in gonadal development. In the subsequent generations, the third to the fifth there is accruing retardation in growth with accruing acceleration in gonadal and bodily development. Precocious 'dwarfism' is the outstanding result.

The effect of pineal extract on growth is revealed in figure 1 which represents the growth curve of the successive generations and in figure 2 which contrasts a fifth generation pineal treated rat with the normal of the same age. The 'dwarfism' resulting from pineal extract (Hanson) is usually permanent though less striking as the animals age. In rats of the second or

later generations, perhaps less than 10 per cent attained normal weight or growth. The early employment of potent extract in the young almost always insures more striking and more permanent "dwarfism."

Though small, the resulting animals are precocious in development. The acceleration in differentiation is shown in the accompanying table. The lack of uniformity in size and in the rate of growth and development of individual members of a litter is striking. Because of this variability, the range of values, as well as the average, is presented in the table. The compiled data on both the growth and the development, as expressed in the table and chart, reveal the same step-like progression in succeeding generations under treatment as was evidenced in our thymus work. However, in the pineal studies there appears a peculiar paradox, a dissociation of the effects on growth and differentiation. The progressive accruing effect is in two or possibly three directions, retardation in growth accompanied by acceleration in gonadal development and also in bodily differentiation.

Owing to these changes in growth and development, the young of the pineal treated strain are quite bizarre in appearance, especially in the second and third weeks, until the body is thickly covered with fur. The configuration of the body as well as the shape of the head and face seem to depart at times considerably from normal. The short snout, broad face, round head, heavy jaw and bulging eye give a "bulldog" appearance. The small size, the large feet, the squat, compact figure suggests the "Hercules in miniature" effect, said by some to characterize the clinical picture of pineal tumor.

From the foregoing it is evident that our results in the study of many hundreds of rats do not conform entirely to most of those reported in the literature. It is true that in common with the majority of workers we have observed little or nothing of significance in the first generation under treatment. In the subsequent generations we have consistently found "dwarfism" rather than stimulation of growth. Precocity, however, has been observed in all our animals from the third generation on, and this concerns both gonadal and bodily development. The resulting animal<sup>34</sup> is small, often only half the normal size during the early weeks of life precocious in development with genitalia suggesting those seen in macrogenitosomia praecox. In addition, the animals are physically weak and appear more irritable and nervous than normal.

One other quite striking feature seems worthy of record, namely, the high incidence of eye disease in the pineal treated series of rats. Blindness is a rather frequent occurrence. This has been observed in perhaps a dozen rats in the pineal group but only twice in our thymus strain. As a rule blindness affects one eye, but in four instances it has been bilateral. The cause is unknown. It is possible that injury plays a role. Bilateral cataracts were responsible in two rats. Bilateral anophthalmia was seen in another animal. Congenital hypertrophy has been seen in two instances and the so-called small eye on several occasions. Even the opening of the eye is peculiar in our pineal treated strain. When the eyelids separate, the pupil is not revealed, the eye slit as a rule being too high for the

<sup>34</sup> Caution must be exercised as yet in interpreting the biologic effects as indicating the functions of the pineal gland. If such were the case one should expect pinealectomy to result in enhanced growth and retarded development. Such however is not the case to date in a small series of rats subjected to pinealectomy in our institute by Dr. N. H. Einhorn.

pupil. Eventually, however, some form of adjustment is effected whereby the eyeball and palpebral fissure appear to harmonize.

#### CONCLUSIONS

Pineal extract (Hanson) has retarded the rate of growth and accelerated the rate of differentiation and has hastened the onset of adolescence in the offspring of treated parents. The end result is "dwarfism" associated with sexual precocity and relative macrogenitalism.

The injection of succeeding generations of parent rats has resulted in the amplification of these biologic effects in their young.

Thirty-Fourth and Pine streets

#### ABSTRACT OF DISCUSSION

Dr. R. G. Hoskins, Boston. If one had adopted one of the two possible interpretations of macrogenitosomia praecox as due to pineal disease, that is to say if one had accepted the theory that it was due to the production of a hormone and not to some destructive influence, one would have predicted that an extract of a thymus when derived, would have the properties that this extract does have. The parallelism of prediction with what has turned out to be the properties is almost uncanny. The work raises a great many more questions than could even be asked in three minutes and I am certain that, if the time for asking questions were sufficiently extended, enough could be asked to keep the authors busy the rest of the afternoon. Clinically there is great need for a preparation having the described properties. Every once in a while I am consulted by an anxious mother who tells me that her daughter at 16 or 17 has achieved a height of about 6 feet and is still growing. This becomes a genuine tragedy in the life of a young girl. She doesn't fit into any social situation, her whole personality is warped by the maladjustment. I should like to ask whether anything has been done as yet toward the clinical application of the extract. Another question is whether this influence is transmitted partially through the father, if so how do the authors believe that the influence is transmitted? I am not quite clear as to what direct effect the influence has on the individual himself and what proportion of this is obtained through the germ plasma. Does the picture shown represent only the prenatal influence, or does it represent in part a direct influence?

Dr. Leonard G. Ronvick, Philadelphia. So far as the clinical application is concerned, I am the only person that has ever taken any of this extract. It was a little more irritant locally than most other extracts. We are going to attempt the application of this in just such cases as you have suggested overgrowth. I think in both male and female there may be a field. Now as to the part the father plays I think I should discuss it from the standpoint of the thymus on which we have more information than we have in relation to the pineal body on which work is just beginning. In the thymus if we treat the father alone we shall see nothing abnormal. If we treat the mother and father we see the maximal effect. If we treat the mother alone we fall between or see nothing. I suspect by analogy but we must prove it that we may see the same here. The only obvious effect that I know of on the individual rat treated has to do with loss of weight. Many of these animals follow the normal weight curve but as they continue under treatment they lose considerable weight. This may have an application in overweight. That of course must yet be determined. We feel that these pineal rats are not as healthy as our thymus animals. Thymus animals are the healthiest rats that I have ever seen. Pineal rats are irritable and on edge. The period of gestation is twenty-two days. When we get the pineal strain mixed under way with treatment we have had in some instances litters repeatedly every twenty-three days. This suggests breeding possibilities. We are going on with this work into succeeding generations and we shall follow through with all the types of control we used with the thymus strain.

## Clinical Notes, Suggestions and New Instruments

### ABDOMINAL APOPLEXY

FATAL INTRAPERITONEAL HEMORRHAGE DUE TO SPONTANEOUS RUPTURE OF A VISCERAL ARTERY

M. T. MOOREHEAD, M.D., TUSCALOOSA, ALA. AND JAMES S. McLESTER, M.D., BIRMINGHAM, ALA.

Fatal nontraumatic hemorrhage into the peritoneal cavity of a male, without malignancy, is a rare vascular accident. A careful search of the literature as far back as 1912 fails to disclose the report of a single case. Several instances of massive hemorrhage into the peritoneum have been reported<sup>1</sup> but most of these resulted from trauma, cancer, or disease of the female generative organs. In a few cases the bleeding point could not be located. Three nonfatal surgical cases are on record in which relief was afforded by ligation of the bleeding vessel.<sup>2</sup> Cecil,<sup>3</sup> in his textbook of medicine discusses arteriosclerosis as a cause of hemorrhage into the peritoneal cavity but does not cite specific cases. Aaron<sup>4</sup> mentions arteriosclerosis as a cause of rupture into the lumen of the gastro-intestinal tract but fails to mention rupture into the peritoneum.

Hemorrhages into the lumen of the stomach and intestine due to ulcer, cancer and varicosities occur frequently, mesenteric thrombosis associated with arteriosclerosis is fairly common but actual rupture of an artery into the peritoneal cavity is a different matter. In the cases recorded here no lesion of the gastric or enteric mucosa was present and no blood was to be found in the lumen of the gastro-intestinal tract. Each patient was confined to bed for several weeks prior to death thus practically eliminating the possibility of trauma as a cause.

#### REPORT OF CASES

In the first case hemorrhage originated at the juncture of the right and left gastric arteries on the lesser curvature of the stomach. At this point a large densely laminated hematoma was found encasing the severely diseased gastric artery. This hematoma was so large and so dense as to resemble tumor growth at first sight. It was located partially beneath the peritoneum and was partially free showing abundant evidence of recent bleeding. At no other point in the peritoneal cavity was there evidence of hemorrhage or disease.

The patient, a white male clerk, aged 44, was admitted to the hospital Oct. 4, 1934 because of vascular hypertension. His complaint of general weakness and difficulty in walking had had its onset in February, 1934. A doctor's examination in July of that year had revealed hypertension and Bright's disease. He gave a history of having had a penile chancre in 1914 which had not been properly treated. The family history was negative or irrelevant except for the presence of Bright's disease in a sister. Physical examination revealed nothing of note except severe hypertension, the systolic blood pressure being 220 the diastolic 140 mm. of mercury. Roentgenograms revealed evidence of aortic disease with beginning cardiac enlargement. The blood Wassermann and Kahn reactions were strongly positive. The blood serum was found to contain 36 mg. of nonprotein nitrogen and 16 mg. of urea per hundred cubic centimeters. Frequent examination of the urine revealed

1. Reports of massive hemorrhage into the peritoneum: Box, C. R. and Bamforth, Joseph, *Lancet* 2: 1115 (Nov. 28) 1925; Bruce, H. H., *Ann. Surg.* 60: 776 (Oct.) 1929; Churchman, J. W., *Am. J. M. Sc.* 142: 825 1911; Hartley, Harold and MacKechnie, D. M., *Lancet* 1: 289 (Feb.) 1934; Kurr, H., *Wien. klin. Wchnschr.* 35: 222 (Feb. 19) 1925; also J. A. M. A. 84: 1161 (April 11) 1925; Mangol, R. H., *Lancet* 1: 113 (Feb. 6) 1924; Matthews, T. E., *Brit. M. J.* 1: 111 (Jan. 18) 1930; 1: 126 (May 4) 1929; 1: 810 (May 4) 1929.
2. Starcke, C., *Symptomatic Rupture of Celiac-Mesenteric Artery*, *Lancet* 1: 2913 (Dec. 27) 1923; Budle, M., *Spontaneous Rupture of Gastro-Pyloric Artery*, *Munchen med. Wchnschr.* 72: 1383 (Aug. 14) 1925; Green, W. T. and Lowers, J. H., *Intra-Abdominal Apoplexy*, *Ann. Surg.* 63: 1070 (May) 1931.
3. Cecil, R. L., *Textbook of Medicine*, ed. 3, p. 892.
4. Aaron, C. D., *Disease of the Digestive Organs*, ed. 1, Philadelphia Lea & Febiger, 1915, p. 666.



nothing of note except traces of albumin and, at one time, a few granular casts. The specific gravity of the urine was frequently low but reached 1020 on one occasion. The electrocardiogram showed a low T wave in all leads with a cardiac rate of 120 per minute. Other laboratory tests added no information of value. The patient was bedfast throughout his hospital stay of twenty-seven days. During the last week paralysis of the left arm developed. His blood pressure remained high throughout. Treatment was largely symptomatic, although small doses of digitalis and one small dose of neosphenamine were given. He died rather suddenly Oct 31, 1934, with signs and symptoms pointing toward internal abdominal hemorrhage.

Autopsy performed on the day of death revealed a distended abdomen, which contained roughly 4000 cc of free blood and fresh blood clot. The blood was present only in the peritoneal cavity. There was no evidence of trauma. The abdominal viscera were in good condition and the peritoneal surfaces showed no change except in the covering of the stomach. Here the gastric artery, which showed a marked degree of atherosclerosis, had ruptured at the juncture of the right and left branches on the midportion of the lesser curvature. A large hematoma was found encasing the artery at this point. Another hematoma was found on the greater curvature of the stomach enclosing the gastro-epiploic artery, but it was small and was located entirely beneath the peritoneal surface. The gastro-epiploic artery was found to be completely occluded in the central portion of this lesion, apparently because of atherosclerosis and ancient thrombosis. Careful examination of the gastric and intestinal mucosa failed to reveal ulceration or other evidence of disease. The muscular tunics were intact and in good condition throughout. There was no blood present within the lumen of the gastro-intestinal tract. The aorta and entire vascular system showed an advanced degree of arteriosclerosis. There were no other important pathologic changes present. The observations in this case were confirmed by careful histologic study of the vascular system and of all viscera. No important microscopic evidence of disease could be found excepting arteriosclerosis and possibly syphilis.

Another case of fatal intraperitoneal hemorrhage was seen recently in a white man aged 50. In this instance the exact point of bleeding was difficult to locate. Rupture appeared to have taken place at the superior mesenteric artery. The arteries of the pelvis as well as those of the splanchnic area, showed a severe degree of atherosclerosis with heavy calcification and, in some areas, complete occlusion. The patient a salesman was admitted to the hospital Dec 17 1933 for the treatment of pulmonary emphysema and myocarditis. His complaint of dyspnea and mild precordial pain was of several years' duration. He gave a history of having had pulmonary tuberculosis in 1919. He was cyanotic and dyspneic on admission and his condition remained grave throughout. Laboratory tests and other examinations were essentially negative except that an electrocardiogram showed inversion of the T waves in leads 2 and 3. The blood Wassermann and Kahn tests were entirely negative. The values for urea sugar and nonprotein nitrogen in the blood were but slightly elevated while repeated examination of the urine failed to show definite abnormality. There was marked polymorphonuclear leukocytosis but no other significant change in the blood picture. The roentgen observations were not remarkable. Treatment was largely symptomatic. His condition became worse and he died on the forty-sixth day with definite evidence of recent internal hemorrhage. An immediate autopsy revealed an extensive lower abdominal hemorrhage in the peritoneal cavity. Approximately 3000 cc of blood and recently formed blood clots were found in the abdominal cavity. The pelvis was filled with blood clot and free blood. The condition of the pelvic and splanchnic blood vessels was very bad apparently the result of arteriosclerosis. The tunics of the superior mesenteric artery were split for a distance of several centimeters by a dissecting aneurysmal hemorrhage. This was believed to represent the original site of bleeding. There were no other important pathologic lesions present except moderate pulmonary emphysema and mild nephrosclerosis. This conclusion was supported by microscopic study of all the major viscera and of the vascular system.

## CONCLUSION

Vascular disease appears to have been the underlying cause of abdominal hemorrhage and death in both of these cases. This is a rare postmortem finding, but, when the frequency of cerebral apoplexy of similar origin is considered, it is not surprising. Arteriosclerosis as a cause of death is apparently on the increase. A number of things suggest themselves as responsible for this increase. The principal factor probably is that more people live to an old age now than formerly, and therefore more people have time to develop arteriosclerosis. Other factors, such as faulty diet and a faster tempo of life, may also operate in the same direction. Coronary disease today probably outranks in frequency and in importance all other causes of cardiac disease. It is certainly the most common cause of sudden death. Cerebral apoplexy is also a common cause of moderately sudden death, but abdominal apoplexy is rare.

There are many theories as to the cause of arteriosclerosis which cannot be discussed here. One wonders whether there is justification for the theory which incriminates cholesterol, a substance found chiefly in eggs, cream and butter.

## SUMMARY

Two unusual cases of fatal bleeding into the peritoneal cavity were found at autopsy to be due to spontaneous rupture of a splanchnic blood vessel. No record of a similar fatality can be found in the literature. Rupture of the gastric artery had occurred in the first case, while the site of rupture in the second appeared to have been the superior mesenteric artery. The first case was complicated by syphilis, while the second was essentially uncomplicated. The part that syphilis played in the first case is difficult to estimate, but its absence in the second is not worthy. In both cases severe arteriosclerosis was present and probably played the most important etiologic role.<sup>5</sup>

# GLYCOSURIA CAUSED BY ADMINISTRATION OF ANTUITRIN S FOR BILATERAL UNDESCENDED TESTES

HARRY KOPLIN, M.D., LOS ANGELES

In May 1935 a mother consulted me about her son aged 30 months who had bilateral undescended testes. A complete physical examination showed no other abnormalities. The scrotum was empty, and the testes were not palpable.

Because of favorable results reported in the treatment of several cases of undescended testes with antuitrin S, I proceeded to treat this child with it. Three injections of 1 cc each were given three times a week every other day. After three weeks the scrotum began to turn pink and became swollen. In the left groin there appeared a small tumor about the size of a normal testicle. The child also complained of pain in the groin.

After about the eighth week of treatment the child began to have enuresis. He also developed a severe polydipsia. The child would wake at night, complaining of extreme thirst, gulping down a full glass of water almost in one breath.

An examination of the urine showed a large trace of sugar. The specific gravity was 1028. No albumin was present. The child was very nervous and cross. He lost his appetite and kept asking for water all the time.

The antuitrin-S was immediately discontinued, and no other treatment was given. Daily urinalysis was done, and after three weeks from the time the last dose of antuitrin S was given the urine became sugar free. The boy began to eat again the enuresis stopped, and there was no polydipsia.

Both testes remain undescended. The left one can be palpated in the left groin; the right one is not palpable at all. No further treatment with antuitrin-S was deemed advisable.

4408 1/2 South Broadway

5 This paper was submitted to the U. S. Veterans Administration, Washington, D. C., March 15, 1935. The autopsies were performed Feb. 1 and Nov. 1, 1934, at the Veterans Administration Facility, Tuscaloosa, Ala. Since the paper was written two somewhat similar reports have appeared in the literature. Willius (Proc. Staff Meet. Mayo Clin. 10: 73 [Jan. 30] 1935) reported a fatal case of ruptured mycotic aneurysm of the splenic artery due to bacterial endocarditis. J. R. Buchbinder and E. I. Greene of Chicago (Intra Abdominal Apoplexy J. A. M. A. 105: 874 [Sept. 14] 1935) reported a surgical case of ruptured gastric artery due to arteriosclerosis and cited three similar cases in the literature in all of which recovery occurred. Our cases appear to be the first fatal arteriosclerotic cases and the first with postmortem confirmation.

## Therapeutics

### THE THERAPY OF THE COOK COUNTY HOSPITAL

EDITED BY BERNARD FANTUS, M.D.  
CHICAGO

*NOTE.*—In their elaboration, these articles are submitted to the members of the attending staff of the Cook County Hospital by the director of therapeutics, Dr. Bernard Fantus. The views expressed by various members are incorporated in the final draft for publication. The series of articles will be continued from time to time in these columns.—Ed

#### THERAPY OF COUGHS

Coughing may become a part of a vicious circle, for violent coughing irritates bronchial tissue and such irritation leads to further coughing, which may continue indefinitely unless the vicious circle is checked by appropriate treatment of the cough.

Treating a cough does not mean "checking it" excepting in a small percentage of cases, for most coughs are useful.

#### THE USEFUL COUGH

A useful cough should be assumed to be present unless it is obvious that the cough is useless. A useful cough is one that has secretion to be brought up. It is one of the two means by which drainage from the bronchial tree is maintained, ciliary action being the other one. As the first principle in the treatment of all infections is to maintain drainage, the cough is presumably useful, whenever bronchial or pulmonary infection is present or assumed to be present.

There are three kinds of useful cough: the "tight" cough, the "loose" cough and the "insufficient" cough. All three kinds of cough may occur in the course of a single case of bronchitis, and each of them requires different treatment. Just as in war the situation may change from day to day, what was good therapeutic tactics one day may be all wrong the next. Most cases of bronchitis, as inflammations of mucous membranes in general, go through at least two stages, the stage of dryness and the stage of secretion, and it certainly is worse than foolish to keep on with measures that increase secretion when the cough has become loose.

*The "Tight" Cough.*—A tight cough requires, of course, to be "loosened up," and the single most important agent for this purpose is water—water from within (by ingestion) and water from without (by inhalation). When such a cough occurs in the early stages of a bronchitis, modifications of the blood supply to the skin of the chest and of the body as a whole may have well defined therapeutic potency. As in cases of such a cough the mucous membrane is likely to be very irritable irritants of all kinds such as menthol inhalation must be avoided in its treatment.

*Water Drinking.* To emphasize, in this manner the importance of the water as an expectorant might seem redundant were it not for the fact that thus, the cheapest of all remedies is most often omitted from prescriptions. When the patient is "dehydrated" can a cough be otherwise than dry? And yet, in the hospital, nurses will conscientiously administer, every two hours a dose of cough medicine without water or in just a little bit of water and let the patient go thirsty in the interval. There should be at the bedside of every patient a carafe of water covered with a drinking cup so that the patient can help himself to water whenever he needs it, and there should be an attendant—it need not be a nurse—in every ward whose chief business it is to keep the

carafe of every bedfast patient filled with fresh cold water and to help those patients who cannot help themselves to take some water at frequent intervals. The sicker the patient, the less water he can or should take at one time, but the more frequently should he be given it.

Inhalation of water vapor is often incorrectly spoken of as 'steam inhalation.' Water vapor inhalation is probably not so much a direct way of softening tenacious mucus as it is a way of soothing the inflamed respiratory mucous membrane. It is to the irritated respiratory mucosa what the poultice is to the skin—an application of warmth and moisture. Patients suffering from acute inflammations of the larger respiratory passages—whether of the pharynx, larynx or bronchi—do best when in a warm atmosphere supersaturated with moisture. Suffocative spasms, as of croup or asthmatic attacks in bronchitis may thus be not only relieved but also prevented. The inhalation of water vapor may also have a prophylactic value against bronchopneumonia or prevent its extension. Hence, in all critical cases, provisions should be made to moisten the atmosphere as liberally as possible by means of a 'bronchitis kettle,' the 'steam tent,' large pans of water put on 'radiators,' or moist sheets hung up in the room. One should keep the relative humidity high, above 65, by whatever means available. It is obvious that keeping the atmosphere constantly moist will be more valuable than intermittent 'steam' inhalation but also that the latter is better than none at all. Medication of the steam is probably of little intrinsic value. If the medicinal addition is made too strong—as of a volatile oil—it may be harmful to the acutely inflamed membrane. Having a teaspoonful of Tincture of Benzoin added to a pitcher half full of steaming water over which the patient holds his face while breathing deep may make 'medicine-minded' persons carry out this treatment more conscientiously (every two hours) than if unmedicated steam inhalation is prescribed. No patient should go out into dry cold air shortly after a 'steam inhalation,' as this seems to make the membrane particularly sensitive. Smoking not only by the patient but also by others in the sickroom of a bronchitis patient should be strictly taboo.

*'Solvent' Expectorants.* There are three salts that deserve special recognition and discriminating application as expectorants in the therapy of the tight cough: ammonium chloride, sodium citrate and potassium iodide. In addition the use of ipecac, as probably the best representative of the 'nauseant' expectorants, might be worthy of discussion here.

#### PRESCRIPTION 1—Ammonium Chloride Cough Syrup

R Ammonium chloride 10.00 Gm  
Syrup of Cherry\* to make 120.00 cc  
M Label: Teaspoonful in a cupful of water every two hours (To loosen a tight cough.)

The Syrup of Cherry recommended here will be official in N. F. V. 1. It is much more pleasant than the Syrup of Wild Cherry which made from Wild Cherry Bark is often nothing less than nasty. The doctor who will take the trouble of comparing the two syrups will soon forget to use the word 'wild' in his cherry syrup prescriptions.

All the halides of the alkali metals have a tendency to appear rapidly on the mucosae of the body, carrying fluid with them, and there is good reason to believe that ammonium chloride is the best of these for the purpose, provided it is given in liberal doses. 0.3 Gm every hour or at least every two hours for the effect does not last long. It must be given in a cupful of water, as ammonium chloride has a dehydrating effect when fluid is restricted. As a vehicle (prescription 1) Syrup of Cherry should be preferred to the Syrup of Wild Cherry so frequently used in cough medication.

For a child prejudiced against "medicine," it might be better to prescribe the remedy with Syrup of Acacia (prescription 2) as a vehicle and to employ the following "trick" to overcome the prejudice. Have the mother start with a teaspoonful of maple syrup in a wineglassful of water and give this "syrup water" for the first dose or two. Gradually increasing doses of the medicine are then smuggled into the syrup water and are likely to be taken with relish. Of course, syrup in excessive quantities or concentration should be avoided, as it may derange digestion and spoil appetite. The employment of a cough "inctus," a medicine so thick and sticky that it has to be licked from a spoon, is properly a thing of the past.

**PRESCRIPTION 2—Ammonium Chloride for Child 5 Years of Age**

|   |   |          |
|---|---|----------|
| R | Ammonium chloride   | 2 00 Gm  |
|   | Syrup of Acacia   | 60 00 cc |
| M | Label: Teaspoonful in water every two hours (for 'tight' cough) |          |

**PRESCRIPTION 3—Sodium Citrate**

|   |   |                   |
|---|---|-------------------|
| R | Sodium citrate  | 30 00 Gm          |
|   | Water   | 30 00 cc          |
|   | Syrup of Orange   | to make 120 00 cc |
| M | Label: Teaspoonful in glassful of orangeade or lemonade every two hours (in febrile bronchitis) |                   |

Sodium citrate should probably be preferred to ammonium chloride when the patient has fever, a condition that carries with it a tendency to acidosis, which ammonium chloride might possibly increase to the disadvantage of the patient. Sodium citrate, in doses of 1 or 2 Gm (prescription 3) every hour or two, is an indirect alkali, i. e., it does not neutralize gastric secretion. It acts as an expectorant when given with plenty of water. It is also a diuretic and in sufficient dosage has a laxative effect, all of which makes it a veritable bronchitis "polychrest." Having a mild saline taste, it is easily disguised by a fruit drink, such as lemonade or orangeade. Its only disadvantages are that it may upset the stomach when given in excessive dosage or insufficiently diluted and that it sometimes causes urticaria.

Ipecac is a time honored remedy in the acute bronchial colds of infants and children. The Syrup of Ipecac may be given in doses of five drops for the first year of life, one drop being added for each year up to the adult dose. It may be combined with either one of the aforementioned salines for possible synergism (e. g., prescription 4).

**PRESCRIPTION 4—Sodium Citrate and Ipecac for Child 3 Years of Age**

|   |   |                  |
|---|---|------------------|
| R | Sodium citrate  | 3 00 Gm          |
|   | Syrup of Ipecac   | 7 00 cc          |
|   | Syrup of Orange Flowers   | 50 00 cc         |
|   | Water   | to make 60 00 cc |
| M | Label: Teaspoonful in one half cupful of water every two hours alternating with small glassful of orangeade or lemonade (in febrile bronchitis) |                  |

Iodide is the most powerful agent available for producing hyperemia and exciting secretion of the respiratory mucous membrane, these being generally the first manifestations of the administration of iodide, called "untoward" when this effect is not wanted. In the presence of an acute inflammation of this mucosa, the irritative action causing these effects may add insult to injury. Iodide is therefore contraindicated in acute bronchitis. It is only when the acute stage of bronchitis has passed and the secretion is still tenacious and difficult to dislodge—the milder solvent expectorants having failed—that iodide is likely to be useful. It should then be given in rather small doses and at short intervals (prescription 5), which brings out most especially the effect on the respiratory mucous membrane, and with the directions to take it in a tumblerful of

water every two hours until the cough becomes "loose" or the nose "starts running," and then every four hours. For a child, syrup of hydriodic acid may be prescribed, the sour taste of which blends well with a fruit syrup as a disguise (prescription 6).

**PRESCRIPTION 5—Iodide Cough Syrup**

|   |  |                   |
|---|--|-------------------|
| R | Potassium iodide   | 10 00 Gm          |
|   | Syrup of Orange  | to make 120 00 cc |
| M | Label: One half to one teaspoonful in a cupful of water every two hours until expectoration is free, then every four hours (To loosen up an obstinate 'tight' cough) |                   |

**PRESCRIPTION 6—Hydriodic Acid for Child 3 Years of Age**

|   |   |                  |
|---|---|------------------|
| R | Syrup of hydriodic acid   | 15 00 cc         |
|   | Syrup of cherry   | to make 60 00 cc |
| M | Label: Teaspoonful in water every four hours (To loosen up the 'tight' cough of subacute bronchitis in a child) |                  |

Many sufferers from a tendency to chronic cough find that they are more comfortable using iodide more or less continuously than they are without it. In such cases, it is practical—after the desired effect has been secured by more frequently administered dosage—to prescribe it in larger doses (from 0.3 to 0.6 Gm) three times a day after meals, to be taken in a tumblerful of milk.

A warning must be sounded against the use of iodide in patients subject to tuberculosis. In many of these it tends to increase the destructive factor of the disease and favor its spread. Hence a suspicion even of the presence of tuberculosis should lead one to withhold iodide. Creosote is the remedy of choice in tuberculosis.

**Maintenance of Skin Hyperemia.** It is not fancy but fact that chilling of any part of the skin, more especially of the chest, causes bronchitis patients to cough more.

Absolute rest in bed is, of course, the prime essential in the therapy of all cases of febrile bronchitis, and this should include the strict use of the bedpan and urinal. Hypostatic congestion should of course be avoided in elderly people by frequent change of posture. If there is no fever, it suffices to confine the patient to a room kept, as nearly as possible, at a temperature of 70 F. As many of these patients do not feel particularly ill, they may rebel at this item of the treatment. To such it should be pointed out that the proper treatment of bronchitis may at the same time be the prophylaxis of pneumonia. The duration of such confinement should be proportionate to the duration and severity of the attack. It should exceed it by a liberal margin of days in all especially threatened individuals, including particularly patients at the extremes of life, those handicapped by systemic disease, and those prone to chronic cough. The general regimen should also include prohibition of visiting for the less the patient talks the less he coughs. The diet need not be restricted unless there is a good deal of fever, if there is, the diet suitable in Fever Therapy (q. v.) is ordered.

The diet of younger children needs to be modified with the fact in view that they are unable to raise sputum but swallow it. The buffer action of the mucus still further decreases the acidity of the gastric juice, which fever may have impaired to a considerable degree. Hence the milk should be skimmed and then acidified with orange juice, one ounce of which is added slowly drop by drop, and with constant stirring, to a pint of cold milk. This reduces the size of the curd, greatly increasing the digestibility of the milk.

Liniments, by maintaining hyperemia of the chest, relieve the sense of "tightness" or of substernal soreness, if they do nothing else. Greasing the child's chest with Camphor Liniment and covering it with flannel jacket or a "cotton jacket" is an established

domestic remedy, probably not without merit. One must beware, however, of burdening an infant's chest with heavy applications, e g, a clay poultice. For adults Chloroform Liniment may be preferred. If a flannel chest protector is too old fashioned for the modern woman suffering from acute bronchitis, one should at least insist on a flannel nightgown or a bed jacket to be worn instead of the flimsy decollete trifle worn nowadays.

In all critical cases—and every case of febrile bronchitis in an infant or an aged person should be considered critical—it might be well to push the chest hyperemia treatment to its logical maximum, which is most conveniently attained by the mustard poultice. Mixing one part of mustard with two parts of flour (or four parts for children) and adding warm (not hot) water, one makes a moderately thin paste that is spread about one-eighth inch thick on a backing of old muslin or even of paper, large enough to cover the front of the chest from axilla to axilla, with a quarter circle cut out at the upper corners for the shoulders. A piece of cheese cloth covers the paste, which is then applied, for from five to fifteen minutes, to the chest previously anointed with petrolatum. The same poultice may then be applied to the back for a similar length of time, after which it is discarded. The strength of a reapplication, made at intervals of from six or eight hours, depends on the reaction previously secured. If it was deficient, the strength may be increased. If the skin is still flushed, the strength is progressively decreased by adding relatively more flour to the mustard as the skin becomes more sensitive. This treatment probably does good only during the stage of acute congestion. It is questionable whether it is of any service after the first two or three days of an acute bronchitis.

A plaster support of the lower costal arch is likely to be of comfort when excessively violent coughing has caused a soreness across the epigastrium or elsewhere. A Belladonna Plaster, applied while the chest is in the expiratory position, frequently suffices to give considerable relief. When, however, a cough is associated with severe stabbing pain in the chest, which is also produced by deep inspiration, as in pleurisy, it is nothing less than grievous neglect to omit the tight application of strips of Adhesive Plaster to the affected half of the chest while it is in the position of extreme expiration, in such a way as to limit greatly the respiratory excursions of the chest, which at once minimizes the pain. An elastic web (e g, "Ace") bandage 4 or 6 inches wide, applied snugly to the chest is often more comfortable, especially in women.

*The "Loose" Cough*—As soon as the cough has "loosened up," most of the treatment previously described should be abandoned. Such a patient is now usually well on the road to recovery and may need nothing further. If, however, the loose cough is troublesome, if there seems to be too much expectoration and the cough shows a tendency to "hang on," the following items of treatment may be brought into requisition: 'stimulant' expectorant volatile oil vapor inhalation and 'reactive' chest applications: the bronchitis therapeutic triad of attack from within from without and through the air, which may succeed when any one of these alone may fail.

Stimulant expectorants are aromatic bodies that owe their virtue to elimination from the bronchial mucous membrane. Given in sufficient dosage they possibly tend to favor healing by producing a curative

hyperemia. They must not be given early in a case of acute bronchitis, as they may cause recurrence of the sense of soreness in the chest and of the difficulty of expectoration.

Creosote carbonate (prescription 7) has been given in ascending dosage, though the usefulness of these preparations given orally is being questioned. As it is also antipyretic, it might be used in constant dosage of from 0.5 to 1 cc every two to four hours, should such an effect be desired when there is also fever. It is best given suspended in a tablespoonful of hot milk, and

#### PREScription 7—Creosote Carbonate

R. Creosote carbonate 30.00 cc  
Label: Five drops in tablespoonful of hot milk (followed by glassful of milk) three times daily after meals. Increase dose by one drop daily up to thirty drops three times daily (in loose cough).

this followed by a cupful of milk. When it is used for a long time, as in cases of tuberculosis, it is necessary to watch not only for symptoms of gastric intolerance and dizziness but also most especially for discoloration of urine or albuminuria. It is contraindicated by the presence of nephritis. From time to time its use should be intermitted, to be resumed as required, for, when used in large quantities for a long time, it may rob the body of sulfur through its conjugation in the process of elimination.

Terpin Hydrate, given in 0.3 Gm capsules three or six times daily, has the advantage of potability. The Elixir of Terpin Hydrate is not an eligible preparation, as it does not contain enough terpin hydrate (only 0.07 Gm per teaspoonful) to be of much value in such cases.

Inhalations of vapor of volatile oils may, by their irritative effect on the bronchial mucous membrane, stimulate healing by increasing the rapidity of cell division and the accumulation of blood in the part in a manner analogous to that by which tar favors the healing of subacute or chronic skin disease. The diminution and ultimate cessation of secretion expected from such treatment may be the result of an actual hastening of the healing process. If this should be the case, the strength of the irritation must be carefully gaged in accordance with the irritability of the membrane. Certain it is that, employed too soon, too strong or too long, such inhalation may make matters worse. Creosote might be chosen as a typical representative of aromatic inhalants, though Eucalyptol or Terebene might be thought of as succedanea.

The inhalation of the agent by direct heating, as when one pours a teaspoonful of Creosote in an earthenware dish placed over a source of heat, releases a vapor so irritative that the eyes must be protected by watch-glass goggles applied with adhesive plaster, and the nostrils stopped with cotton. Inhalation of such vapor causes violent coughing, which may help in the emptying of the bronchial cavities, and, if such inhalation should be continued after the emptying of the cavity, it may exert on its lining an effect that might stimulate healing as well as possibly diminish the foulness of the secretion for some time afterward. In such cases if the patient can tolerate it, the inhalation might be continued for from one-fourth to one-half hour.

The inhalation is milder if one places a teaspoonful to a tablespoonful of the volatile agent in a half pitcherful of hot water. The most convenient and at the same time the mildest method of using these agents is to drop the volatile material on an inhalation mask such as a chloroform inhaler. For initial strength one might dilute the Creosote with Alcohol and possibly add Chloroform which makes the inhalation more

pleasant (prescription 8) It might be kept up for hours or be intermitted from time to time, as the effects and the patient's tolerance dictate Continuous inhalation, day and night, no doubt gives the maximum effect "Reactive" chest applications may be useful The chest compress, with its power to excite deep respirations and to produce an ebb and flow of blood not only on the skin but probably also in the bronchial mucosa,

#### PREScription 8—*Creosote-Chloroform Inhalant*

|   |            |  |           |
|---|------------|--|-----------|
| R | Creosote   |  |           |
|   | Chloroform |  |           |
|   | Alcohol    | of each  | 20.00 cc. |
| M | Label      | From fifteen to thirty drops on inhaler (in loose cough) |           |

is a measure that should be resorted to more frequently in cases of subacute and chronic bronchitis In a bed patient it may be applied every two or three hours The ambulatory patient applies it at bedtime, to leave it on over night On removing it in the morning, he dashes cold water on the chest and follows this with a brisk rubbing

One requires for this compress a strip of one or more folds of linen about 10 inches wide and 3 yards long, and a strip of flannel of the same length and about 1 inch wider The rolled up linen bandage is well wrung out of water at 60 F This compress is also known as the "cross binder," because it forms a cross on the front and the back of the chest, being applied in a diagonal manner from axilla to shoulder Starting in one axilla, one brings it over the opposite shoulder and then back to the starting point Next it is drawn transversely across the chest under the opposite axilla and across the back over the shoulder of the side one had started on The end is then tucked in, in front, under the transverse course of the bandage The flannel is applied in the same manner and quite snugly Usually three safety pins—one in the midline at the neck and one at each shoulder—suffice to complete good covering, so as to keep "the air from getting at the wet" When the compress is well applied and the patient reacts to it properly, he should within a few minutes, feel warm and comfortable in it

*The "Insufficient" Cough*—The "insufficient" cough is a condition in which the amount of bronchial secretion exceeds the coughing powers so that slime accumulates in the chest Exhaustion produces this condition, so may the unwise administration of narcotics Carbon dioxide narcosis may become superadded, with an inevitably fatal outcome unless the insufficiency of the cough is antagonized by heroic means

When the presence of numerous moist râles all over the chest and other evidence, such as cyanosis, point to the danger of the patient drowning in his own secretions or to the likelihood of the development of bronchopneumonia following obstruction of bronchioles, all liquefying expectorants are contraindicated and checking the cough by opiates or other sedatives is disastrous It is necessary in such conditions to increase the act of coughing so as to favor clearing the chest by expectoration This may be done by the following means

1 Irritation of the pharynx (a) Benzoic acid from 0.10 to 0.20 Gm in powder (prescription 9) or as a

#### PREScription 9—*Benzoic Acid Powder*

|   |                                       |  |
|---|---------------------------------------|--|
| J | Benzoic acid                          | 1.50 Gm.   |
|   | Oil sugar of lemon                    | 10.00 Gm.  |
| M | and divide into fifteen powder papers | Label One every two hours (for insufficient cough) |

lozenge given at two hour intervals, produces a scratchy feeling in the throat that results in coughing

(b) Senega and other saponin containing drugs have a similar action This may make the Fluidextract of Senega (prescription 10) a good addition to the benzoic

#### PREScription 10—*Benzoic Acid and Senega*

|   |                        |   |
|---|------------------------|---|
| R | Benzoic acid           | 1.50 Gm.  |
|   | Fluidextract of Senega | 15.00 cc.   |
|   | Iso-alcoholic elixir   | to make 60.00 cc.   |
| M | Label                  | Teaspoonful in water every two hours (for insufficient cough) |

acid prescription for adults, and the Syrup of Senega the preferred vehicle of sodium benzoate for children (prescription 11)

#### PREScription 11—*Sodium Benzoate and Senega, for Child 5 Years of Age*

|   |                 |  |
|---|-----------------|--|
| R | Sodium benzoate | 0.50 Gm.   |
|   | Syrup of Senega | to make 60.00 cc.  |
| M | Label           | Teaspoonful in a little water every two hours (for insufficient cough) |

(c) Ammonium Carbonate should most especially be thought of as an agent that may favor expectoration by irritation of the throat, while also acting as a circulation and respiration stimulant, effects particularly required in the treatment of bronchitis and bronchopneumonia of babies and young children It is probably best prescribed in Syrup of Acacia (prescription 12)

#### PREScription 12—*Ammonium Carbonate for Child 3 or 4 Years of Age*

|   |                    |  |
|---|--------------------|--|
| R | Ammonium carbonate | 2.00 Gm.   |
|   | Anise water        | 10.00 cc.  |
|   | Syrup of Acacia    | to make 60.00 cc.  |
| M | Label              | Teaspoonful in water every two hours (for insufficient cough and collapse) |

2 Increasing the depth of respiration (a) Patients with insufficient cough must be urged to breathe deeply and to cough and expectorate as much as possible When a patient with greatly insufficient cough, who is in danger of drowning in his own secretions, begs for something to stop the cough and to help him to sleep, this request must be denied, for the good sleep that he craves may be his final sleep Such a patient should be told that he must cough to live that his chief business is to cough, and to sleep by taking snatches of sleep in between coughing spells

(b) Inhalation of oxygen with 5 per cent carbon dioxide may act as the powerful stimulus to the respiratory center required to provoke respirations sufficiently deep to get beyond the accumulating secretion

(c) When psychotherapy is unavailing, because of the patient's inability to cooperate and when carbon dioxide-oxygen is not available, a dash of cold water applied to the chest or even merely to the nape of the neck is a most powerful stimulus to deep respirations The result is best secured by alternate hot and cold affusions to the chest One starts with a pouring of hot water (110 F) until the skin reddens, and follows this immediately with a sudden dash of cold water (60 F) and brisk rubbing These alternations should be continued until the desired effect is obtained One must be careful to avoid exhausting a much enfeebled patient In a child or an infant, immersion of the body in a hot mustard bath may be employed instead of the hot affusions

3 Diminution of secretion This may be attempted by (a) Atropine sulfate, 1 mg hypodermically, most especially when collapse, with pale and moist skin, also indicates it The dose may be repeated in one-half hour if no marked effect is obtained, after this it may be continued at intervals of two hours, the patient being kept on the verge of atropinism

(b) Restriction of intake of fluid should be resorted to only as a measure of desperation and if circulatory



insufficiency likewise demands it, for, in general, natural reactions should be given credit for probably being beneficial. They should be restrained by extreme measures only when they actually threaten life.

(c) Hypertonic dextrose phlebotomy (from 10 to 25 cc of 25 per cent dextrose solution) and (d) blood letting to the extent of 500 cc of blood—measures useful in pulmonary edema—may possibly help to carry a patient through a critical stage.

4 Evacuation of the fluid by (a) Postures. The head-low posture may favor expectoration of very fluid exudate. So does the performance of the movements of artificial respiration, with continuous or intermittent aspiration of the fluid accumulating in the throat. Such maneuvers may be life saving in illuminating gas poisoning.

The actual head-down posture may be of great advantage in lung abscess and in certain bronchiectatic cavities. Such coughs are characterized by being brought on by change of posture. The treatment is carried out by first placing the patient for five or ten minutes on the healthy side to permit drainage of purulent material into the larger bronchi or, if the abscess is in the upper lobe, the patient should sit erect for ten minutes before lying on the healthy side. Then the patient's trunk should be inverted by having him lie crosswise on the bed with the groins at the edge of the bed, so that the body is bent at the hips and the head is at or near the floor, with the body vertical, an attendant should hold the thighs as they lie across the bed. The position is to be maintained for five or ten minutes, the patient breathing deeply. A pus basin had better be placed on the floor near the mouth for collection of the profuse expectoration. This position or any other position that favors expectoration might be assumed four times a day, a half hour before each meal (because of possible emesis) and at bedtimes and even more frequently. Thus the patient may be spared much coughing in the intervals. As such posture treatment is quite an exertion it is of course not to be resorted to if the patient is extremely feeble.

Bronchoscopy is indicated if drainage is obstructed by objects removable by this means.

(b) Emesis. In infants and small children induction of emesis may succeed in producing the powerful compressions of the chest that are required for the evacuation of retained secretion. Also as the infant swallows the sputum, the evacuation of the stomach may be considered a form of "secondary expectoration." One gives for this purpose one teaspoonful of Syrup of Ipecac every fifteen minutes for several doses until the desired result is secured. For small infants half teaspoonful doses of Syrup of Ipecac may suffice.

#### THE USELESS COUGH

One should be very loath to condemn a cough as useless. But there are coughs that are not only useless but even harmful as the cough of aortic aneurysm, the cough provoked by a tuberculous mediastinal lymph gland or the after cough of an acute bronchitis. A useless cough is one that not only fails to bring up secretion but has no secretion to bring up. This gives the indication for antitussive therapy, i.e. the actual antagonizing of the cough reflex, which can be achieved by three different modes of attack which may be employed separately or combined into one grand assault. These are (1) psychotherapy (2) local sedation and (3) depression of the medulla. Antitussive therapy should always be thought of in this order because the first is

the least likely to be harmful and is the one to be employed most generally, and the last is the most liable to be harmful and should be avoided if possible.

1 *Psychotherapy*—The patient should be urged to suppress the cough as much as possible. This is a good rule to lay down for all coughs excepting, of course, the insufficient cough, for patients usually strain a good deal harder in coughing than is necessary or good for them. When there is expectation to be raised, mucus that does not come up readily with one coughing spell will probably come up easily with the next. When there is no shame to expectorate the patient's attention should be called to the utter uselessness of the cough, and its harmfulness should be explained to him. He should know that coughing begets coughing. If the patient remonstrates that he cannot stop coughing because of the irritation that forces him to do so, it may be admitted to be difficult but it should also be pointed out that he may, at times at least, suppress the desire to cough and that each time he does so he makes it easier to suppress the desire another time.

Coughing is decidedly harmful and even dangerous whenever there is a "weak spot" in the lungs. The increased intrapulmonary pressure gotten up in coughing prior to the sudden opening of the glottis will stretch most the least elastic portion of the lungs. It is this that makes pulmonary emphysema progressively worse and that renders impossible the healing of cavities, be they bronchiectatic or tuberculous. It is this stretching of the weakest spot in the lungs that is the greatest possible hindrance to the checking of hemoptysis and, by the possible causing of tears, a constant invitation to its recurrence. Such patients should not only be taught to suppress coughing as much as possible but, when cough they must, to do so with the glottis open, which reduces the cough to a forcible exhalation.

2 *Local Sedation of the Pharynx*—This is likely to be especially indicated in coughs made worse by lying down. In children "marshmallows," honey and milk or flaxseed lemonade are useful. Demulcent lozenges, such as Slippery Elm Troches licorice gum drops or other so-called cough drops, or even a lump of sugar, when slipped into the mouth the moment the warning tickle is felt in the throat, may help in suppressing the cough. Ethylaminobenzoate (anesthestin) lozenges are likely to be still more efficient for the purpose, as their use leaves a numbness in the throat.

3 *Depression of the Medulla*—(a) Bromide is especially valuable when coughing is maintained chiefly by excessive nervous irritability. It may be resorted to in any cough that seems excessive, as it does not really check coughing. Syrup of Glycyrrhiza is a good vehicle for bromide (prescription 13). In this prescription the dose of bromide is so small that when real

#### PRESCRIPTION 13—Bromide Cough Syrup

|   |  |                    |
|---|--|--------------------|
| R | Sodium bromide   | 10.00 Gm           |
|   | Anise water  | 10.00 cc           |
|   | Syrup of Glycyrrhiza   | to make 120.00 cc. |
| M | Label—Teaspoonful in water every two to four hours (for excessive cough) |                    |

sedation is required it might have to be multiplied by 2, 4 or even 8. Other vehicle syrup may be used, e.g., the Syrup of Thyme to which may be added 0.12 Gm of potassium or sodium bromide per teaspoonful. There is no special virtue in the Syrup of Thyme. It merely offers an unusual and not unpleasant flavor, as does also, for instance, the Compound Syrup of Aesculus. Variety in vehicles enables the physician to

administer the same medicines for different purposes, which indeed might be very desirable in a neurotic individual who may need bromide for a variety of excessive nervous reaction. By prescribing the medicine in different vehicles for the different purposes, the patient may be given the benefit of bromide, without arousing in the patient the resentful thought that no matter what he complains of, the doctor always gives him the same medicine.

#### PRESCRIPTION 14—Codeine Cough Syrup\*

℞ Codeine phosphate 0.50 Gm.  
Aromatic Syrup of Eriodictyon to make 60.00 cc  
M Label Teaspoonful in a little water every two to four hours as required (for useless cough)

\* Such prescription requires under the Harrison Act the stating of (1) patient's name (2) his address, (3) the condition for which the prescription is written (4) physician's name (5) his address and (6) his registration number. And it must be written in ink.

(b) Opiates in sufficient dosage check coughing as if by magic. For this purpose codeine is best, the phosphate its most soluble salt, and the Aromatic Syrup of Eriodictyon (prescription 14) its most efficient disguising vehicle. When it is really wished to check cough, the codeine should be given in doses of from 0.03 to 0.06 Gm. every two to four hours as required.

#### CHRONIC COUGH

While, no matter what kind of a cough is being treated, discovery of its cause is desirable, a correct and complete diagnosis becomes the paramount necessity in the treatment of a chronic cough. The great *vis medicatrix naturae* (the healing power of nature) gives assurance of a natural tendency for coughs to cease. When this tendency does not assert itself, one must discover what it is that keeps it from doing so. In the last analysis, this will always be found to be due to either "irritation plus," "nutrition minus," or a combination of the two.

"Irritation plus" lies most commonly at the bottom of a chronic nonproductive (useless) cough, and this "plus" of irritation may be the result of (a) excessive irritability, (b) extrabronchial irritation or (c) inhalation of irritants. It is in the last mentioned kind that the cough may also be of the "useful" variety.

(a) Nervous irritability results in the nervous cough," which may become a lifelong habit indulged in most especially when the individual is embarrassed as by a pause in conversation, or when he is reminded of the cough as by being asked whether the cough troubles him a good deal. It is apt to cease suddenly when the mind is distracted and to disappear at night. It is nearly always accompanied by other phenomena of nervousness and may be displaced by other manifestations of neurosis. In spite of its chronicity, it has but slight effect on general nutrition and there are no physical changes. Such a cough should be cured by psychotherapy in one or all of its modalities, as they may be required: suggestion, reeducation, mental hygiene, psychomalysis. Regarding the symptom itself it is best to employ the policy of neglect." By this is meant paying no attention whatever to the symptoms while giving most solicitous care to the patient as a whole. Such a policy acts as a powerful suggestion that the symptom is not really of any importance, just as direct treatment of the symptom may serve to maintain it by fixing the patient's attention on the cough.

It will not do however to dismiss a cough lightly as being merely of nervous nature because the cough of early tuberculosis may masquerade thus until when this cough throws off its mask it may be too late for the cure that might have been easy at first. Hence the

fundamental principle in all chronic coughs must be "suspect tuberculosis" (q v), as this is the single most common cause of a chronic cough. While it is a grievous error to pronounce this suspicion until one is convinced of its correctness by positive evidence, one must not rest content until the patient either stops coughing or until it is known definitely why he cannot and one is ready to apply the correct remedy that will cure or at least relieve him.

(b) Extrabronchial reflex irritation is often spoken of as the "reflex cough", a faulty designation, for all coughing is reflex. Even though, from a theoretical standpoint at least, the possibility of a "stomach cough," a "uterine cough," a "nasal cough" or an "aural cough" must be admitted, these are so rare in practice that it is just as well to forget about them. On the other hand, one should remember the fact that the pharynx is the most important tussogenic zone next to the tracheal bifurcation and the bronchi, that chronic tonsillitis is perhaps the fourth most common cause of a chronic cough, and that mouth breathing—no matter what its cause—maintains bronchial irritation by insufficient warming and moistening of the inspired air. Next to attention to the chest, all chronic coughs demand attention paid to the throat, irritation of which might also be maintained by discharges from the paranasal sinuses.

In infants and children, extrabronchial coughs are very common. The usual history of a cough starting when the child is in a recumbent position is almost always elicited. The cause may be reflex from the irritating secretions in the nasopharynx, especially chronic infection in the adenoid tissue. In children, a useless or at least excessive cough that hangs on and resists ordinary remedies may be due to pertussis (q v) or to mediastinal irritation. Enlarged mediastinal lymph glands may maintain a cough that can often be cured by appropriate x-ray treatment. This may also cure the dangerous cough of thymus enlargement, the presence of which should be suggested by the triad of cough, dyspnea and stridor occurring in an infant. The rule should be formulated that every case of chronic cough requires a roentgenographic examination of the chest. This enables one to diagnose and, in consequence, cure not only the conditions just mentioned but also early tuberculosis, and it also gives the correct indication for treatment of the "brassy" pressure cough of aortic aneurysm or of a tumor (possibly carcinoma) pressing on the trachea or bronchi. In the "pressure cough" the patient is entitled to all the antitussic in the form of opiate that he needs to keep him as comfortable as possible under the circumstances.

(c) Inhalation of irritants may result in a productive (useful) cough that will not cease until the source of the irritation is discovered and removed. This is not infrequently the excessive use of tobacco. Hence in all chronic coughs the use of tobacco should always be interdicted or at least greatly restricted. Occupational exposure to irritative dust or vapors, as in mining, polishing stone cutting cement mixing or milling, may be the cause of a chronic cough which may demand change of occupation, if proper ventilating devices to protect the worker are not sufficient or available. The rule of employing roentgen examinations in all chronic coughs should enable one to detect pneumoconiosis and to insist on change of occupation before the disease has progressed to the crippling stage.

"Nutrition minus" is the most common cause of the chronic useful cough. In such cases, inhalation of

irritants having been excluded, one must look for a nutritional disturbance that prevents the healing of the inflammation responsible for the secretion. This nutritional disturbance may be found in one of three great groups (a) impaired blood supply, (b) a dyscrasia or (c) local tissue change, and it may be a combination of factors from two or all three of these groups that may account for the chronicity and require correct evaluation of their relative importance for successful therapy.

(a) Impaired blood supply. Heart disease is one of the three most common etiologic factors in maintaining a chronic cough. When this combination is present, the two must be dealt with simultaneously, as the combination may result in a vicious circle. The cough itself should be treated in accordance with the principles previously laid down, and the heart disease as discussed under Therapy of Congestive Heart Failure (q v).

Anemia, when present, deserves radical treatment, as laid down under this heading (q v), for, without a generous supply of good red blood, healing is always languid.

(b) Dyscrasias. When a neoplastic or a diabetic patient develops a bronchitis, treatment of the cough must be combined with the correct treatment of the systemic condition to secure satisfactory results. The presence of an allergy must be most especially suspected when a spasmodic factor is present. The combination of bronchitis and asthma (q v).

In the absence of well defined metabolic disease, the ill defined condition called "poor resistance" may be responsible for the maintenance of a chronic cough. Such impaired resistance should be met by one or more of the following remedies:

1 Cod liver oil. It is probably because the impairment of resistance is in many cases an avitaminosis, most especially in children, and because of the frequency with which rickets (q v) is the cause of chronicity of bronchitis that cod liver oil has acquired a great reputation in the treatment of chronic coughs. There is no doubt that cod liver oil may be an excellent medicine for a child or an adult whose nutrition is poor and who is subject to a winter cough, for cod liver oil is also a fattening food, which makes it superior in those below par in weight to the more concentrated vitamin (A and D) preparations. Cod liver oil should be administered to children in teaspoonful doses and to adults in doses of tablespoonfuls though it may be given either to commence with a smaller dosage and gradually work up to the desirable quantity. It is best orange juice (which may decrease the vitamin C effect) or it may be administered as the Aromatic Cod Liver Oil of the Recipe Book (prescription 15) if the patient objects to the flavor of the oil. Cod Liver Oil Linal-

**PRESCRIPTION 15—Aromatic Cod Liver Oil**

1 Saccharin  
Comp. and Spirit of Orange  
Cod liver oil  
At and after meals (in chronic bronchitis with malnutrition)

Label: Tablespoonful three times daily two hours after meals (in chronic bronchitis with malnutrition)

0.10 Gm  
5.00 cc  
250.00 cc

containing only 50 per cent of oil may meet the indication when the patient refuses to take the oil itself in any form because of its oiliness. It would of course be a mistake to employ Cod Liver Oil in a case of malnutrition to the extent of interfering with the digestion or digestion of other food. Indeed anorexia and fever are the two most important contraindications to Cod Liver Oil. When it produces diarrhea it must also of course be stopped. Not to employ any medicine that upsets digestion or impairs the appetite

should indeed be a fundamental principle in the treatment of all chronic coughs, as the cure may depend more on improvement of nutrition than on any good the medicine may do.

It should also go without saying, were this principle not so frequently neglected, that it takes proper diet, not medicine, to "build up" a patient, and that, before Cod Liver Oil is even started, one should be sure that the nutritive value of the patient's diet has been increased to the limit of his digestive capacity.

2 Arsenic. One may think of arsenic as a possibly useful alternative when other medicine does not seem indicated or is not well borne in the case of a chronic cough. It may display the same kind of healing tendency in chronic bronchitis that it does in some chronic skin diseases, e.g. psoriasis. Properly given, it may improve appetite, digestion and bowel evacuation, favor gain in weight and lessen anemia and make expectoration easier, possibly in a manner similar to that by which iodide acts, catarrh of the respiratory mucosa being one of the earliest untoward symptoms of arsenic action. Indeed, in a case of chronic bronchitis in which iodide is not well borne one should always think of arsenic as a possibly useful succedaneum. When anemia is present, the arsenic may well be combined with iron (prescription 16).

**PRESCRIPTION 16—Arsenic and Iron**

Ar. Arsenic trioxide  
Reduced iron  
At and after meals (in chronic bronchitis with anemia)

Label: One to two pills three times a day

0.03 Gm  
2.00 Gm

3 Proteotherapy. "Poor resistance" may not only be due to obvious malnutrition but also be present in the less obvious form of deficiency in immunization reactions on the part of the patient's system. Focal infection (q v) may be responsible for this and should therefore be searched for and properly treated. Attempts at raising antibacterial resistance by some form of proteotherapy are also in order. Which one of the many possible varieties is best cannot as yet be stated with certainty. One may prefer, as probably its most rational form, the properly graded administration of autogenous vaccine.

4 Ultraviolet rays. As they are applied in the form of sunbaths (heliotherapy) or of the rays from a carbon arc or a mercury vapor lamp, have a stimulating effect on metabolism and resistance to infection, provided the optimal dosage is not exceeded and provided the patient is free from fever or a tendency to fever. It is always best to start with a dose that will certainly be safe and to increase it very cautiously until the skin is tanned when tolerance may be considered to have been established and much larger exposures may be safely borne, but these must always be well within the limit of producing depression or exhaustion. Pigmentation of the skin is essential to success and usually coincides with clinical improvement.

5 Hardening. The 'poor resistance' may also be due to insufficient systemic reaction on exposure to chilling influences. Such patients are liable to take cold frequently have difficulty in getting over colds, and ultimately develop a cough that lingers on all winter but disappears during the summer. This might be one of the differentiating features in leading one to suspect more or less strongly the presence or absence of early tuberculosis for in the latter condition the cough is less likely to be quite as seasonal but to continue throughout the year, though it may be less troublesome during the summer. Such individuals should be taught the hygiene of clothing. This must be degrees be inured to out-

door life. They can be greatly helped in this by a graded course of "tonic" hydrotherapy, a form of water treatment in which a "good reaction" is the sine qua non to success.

Hardening treatment is contraindicated in individuals at the extremes of life, in those enfeebled by any severe systemic disease, such as nephritis, and in rheumatic, neuritic or neuralgic conditions. During menstruation and in the presence of acute catarrh, no matter of which mucous membrane, hardening procedures should be temporarily abandoned.

**6 Climatotherapy.** Change of climate should be insisted on for all those suffering from a winter cough who cannot be subjected to "hardening" or who will not undertake it. Certainly nothing is more rational in therapy than to rescue those who are well during the summer and ill during the winter from the tax that winter puts on their system, most especially as in the cases of "chronic bronchitis" the results of the inclemencies of weather tend to become progressively worse, eventuating in ultimate pulmonary and systemic crippling, premature old age, and a welcomed early death. Such individuals should spend the winter in a warm, sunny climate. For those with profuse expectoration, dry climates are more suitable, while, for those with little expectoration and excessive cough, a moderately moist climate is to be preferred. During the summer, forest areas in moderate elevation as free as possible of wind and dust are best.

To the poor, who cannot afford to travel, the artificial tropical climate of indoor confinement may be the means of minimizing suffering and of prolonging life. Under such circumstances special attention should be paid to uniformity of temperature (from 68 to 70 F) and a sufficient degree of relative humidity (from 40 to 60 per cent).

Much night coughing may be spared a sufferer from chronic bronchitis if his bed is warmed before he enters it and if he is given at bedtime, a hot drink, such as a glass of hot lemonade. Another glass of hot lemonade first thing in the morning will lessen the difficulty these patients experience in clearing their chest of mucus that has accumulated during the night.

Absolute rest in bed even for weeks or longer may be the sovereign remedy for a cough that hangs on, especially if it is accompanied by a considerable degree of malnutrition and particularly if a slight elevation of temperature exists. In this manner a case of incipient tuberculosis may be cured before it is diagnosable.

(c) **Local tissue change.** This condition must be prevented by all means at hand. Unfortunately, this is impossible in case of pulmonary carcinoma, which should be suspected in an elderly person, especially a man, who develops, in addition to cough, pain in the chest, wheezing, possibly hemoptysis, and who loses weight rapidly. The suspicion should lead one to look carefully for metastases which develop early in these cases to examine the chest for even minimal x-ray changes, and to employ bronchoscopy. The early diagnosis may avoid useless treatment by and discredit of the therapist. The employment of adequate roentgen therapy will diminish the suffering which should also be assuaged as completely as possible by the use of an antitussive even to the point of the narcotic habit.

Pulmonary emphysema and bronchiectasis are the most common causes, next to tuberculosis and heart disease for the maintenance of a chronic cough. Dilatation of the bronchi and of the alveoli of the lungs are, indeed, invariable results of any chronic severe

cough, no matter what its origin, and, once these conditions have become established, they maintain the cough even after the original cause has disappeared.

Bronchiectasis (qv), a common cause of what has in the past been called "chronic bronchitis," is now not only definitely diagnosable, thanks to opaque medium roentgenography, but also relatively amenable to treatment by postural drainage, injection treatment of the cavities, bronchoscopy, and pulmonary collapse therapy.

As pulmonary emphysema leads to congestive heart failure, which in turn maintains cough, there exists here a veritable chain of vicious circles. Remembering the essential incurability of these changes, once they are grossly developed, one should resolutely employ all the various means at command to break in on these vicious circles at some one or all points, aiming to establish for the handicapped individual some level of tolerable existence, which the skilful physician may often maintain in a cooperative patient for many years.

From all that has been said, it must be obvious that no greater sin can be committed in therapy than pronouncing a cough a case of "chronic bronchitis," assuming a hopeless and helpless attitude, and letting it go at that.

## Council on Pharmacy and Chemistry

### REPORTS OF THE COUNCIL

THE COUNCIL HAS AUTHORIZED PUBLICATION OF THE FOLLOWING REPORT  
PAUL NICHOLAS LEECH Secretary

### THE POTENCY OF AMPOULES OF PITRESSIN

In New and Nonofficial Remedies 1935, the "pressor" potency of Ampoules of Pitressin (P. D. & Co.) is defined as follows: "each cubic centimeter contains 20 pressor units." Too late for revision of this description, Parke, Davis & Co. informed the Council that the standardization of its product had been changed so that each cubic centimeter was to contain but 10 pressor units. In order that the requisite revision of the description for New and Nonofficial Remedies 1936 might be made, the firm was recently asked whether or not this change was still in effect. The firm replied to the effect that experience indicated that the 10 pressor unit product was not adequate in all cases. It further informed the Council that it had decided to restore Ampoules of Pitressin to the original potency of 20 units per cubic centimeter and that therefore revision of the N. N. R. description would not be needed. In order that the medical profession might be informed, the Council has authorized publication of the foregoing statement.

### NEW AND NONOFFICIAL REMEDIES

THE FOLLOWING ADDITIONAL ARTICLES HAVE BEEN ACCEPTED AS CONFORMING TO THE RULES OF THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR ADMISSION TO NEW AND NONOFFICIAL REMEDIES. A COPY OF THE RULES ON WHICH THE COUNCIL BASES ITS ACTION WILL BE SENT ON APPLICATION.

PAUL NICHOLAS LEECH Secretary

**IODOBISMITHOL WITH SALIGENIN.**—A solution of sodium iodobismuthite (sodium bismuth iodide) and sodium iodide in propylene glycol (racemic 1,2 propylene glycol) containing saligenin and a small amount of acetic acid.

**Actions and Uses.**—Iodobismithol with saligenin seems to be well absorbed and to be excreted fairly rapidly. In laboratory animals the bismuth enters the brain in from 90 to 100 per cent of the cases. The claim is made for it that it will penetrate the brain in significant quantity in a great majority of persons treated. This claim however needs further confirmation and therapeutic indications based on it must be considered unwise.

**Dosage.**—Intramuscular injections of 2 cc. repeated every three days. Two full days should elapse between injections.

From eight to twelve injections comprise a course of treatment. A rest period of from two to four weeks should elapse between courses. At each injection the patient would thus receive from 0.024 to 0.0276 Gm of metallic bismuth (from 0.1154 to 0.1328 Gm sodium bismuth iodide, and from 0.218 to 0.258 Gm sodium iodide).

Manufactured by E. R. Squibb & Sons New York by license of Stanford University U S patent 1 890 508 (Dec. 13 1932) expires 1949) and 1 927 210 (Sept. 19 1933) expires 1950) U S trademark.

**Ampules Iodobismutol with Saligenin 2 cc.** Each 2 cc contain from 0.1154 to 0.1328 Gm of sodium iodobismuthite (equivalent to 0.024 to 0.0276 Gm of bismuth) and from 0.218 to 0.258 Gm of sodium iodide dissolved in propylene glycol containing 4 per cent saligenin and 0.1 per cent acetic acid. The total iodide per 2 cc. is equivalent to from 0.252 to 0.296 Gm of sodium iodide.

The specific gravity of iodobismutol with saligenin at 25 C ranges from 1.167 to 1.175. The pH of iodobismutol with saligenin taken with a quinhydrone electrode ranges from 4.5 to 5.0. The refractive index at 25 C ranges from 1.4609 to 1.4611.

Transfer about 3 cc. of iodobismutol with saligenin accurately weighed to an erlenmeyer flask add 3 cc. of hydrochloric acid and 125 cc. of water determine the bismuth according to the method outlined in New and Nonofficial Remedies under sodium iodobismuthite each cubic centimeter contains the equivalent of not less than 0.012 nor more than 0.0138 Gm of bismuth. Add 10 cc. of a nitric acid-silver nitrate solution (prepared by dissolving 1 Gm of silver nitrate in 20 cc. of water and adding 5 cc. of nitric acid) to about 3 cc. of iodobismutol with saligenin accurately weighed and then add 100 cc. of water allow to stand two hours filter into a prepared gooch crucible and wash with very dilute nitric acid (5 cc. of diluted nitric acid to make 100 cc.) dry to constant weight at 100 C weight of silver iodide is equivalent to not less than 0.135 nor more than 0.145 Gm of iodide per cubic centimeter.

The sodium iodobismuthite in iodobismutol with saligenin conforms to the New and Nonofficial Remedies standards for this substance.

The propylene glycol used in the preparation of iodobismutol with saligenin complies with the following tests and standards.

Propylene glycol racemic 1,2 propylene glycol,  $\text{CH}_3\text{OH} \cdot \text{CHOH} \cdot \text{CH}_3$  occurs as a viscous colorless almost odorless liquid completely miscible with water alcohol, chloroform and ether. The specific gravity at 25 C ranges between 1.035 and 1.037. The refractive index at 25 C ranges between 1.4312 and 1.4317.

Transfer 25 cc. of propylene glycol to a distilling flask determine the distillation range according to Method I of U S Pharmacopeia Ninety-five per cent distills over at from 184 to 189 C (corrected) at 760 mm. The refractive index of the distillate is the same as that of the material before distillation. Agitate 5 cc. of propylene glycol with 15 cc. of distilled water insert a piece of red and a piece of blue litmus paper the solution must be neutral to the litmus papers. Add 1 cc. of silver nitrate solution and 1 cc. of nitric acid to 5 cc. of propylene glycol diluted with 15 cc. of water not more than a slight opalescence appears within fifteen minutes (chloride). Add 1 cc. of barium chloride and 1 cc. of diluted hydrochloric acid to 5 cc. of propylene glycol diluted with 15 cc. of water no precipitate forms in fifteen minutes (sulfate). Bubble hydrogen sulfide through 5 cc. of propylene glycol diluted with 15 cc. of water there is no opalescence and no change of color.

Incinerate about 2 Gm of propylene glycol accurately weighed in a platinum dish the residue is not more than 0.05 per cent.

The saligenin used in the preparation of iodobismutol with saligenin complies with the following tests and standards.

Saligenin ortho-hydroxy benzyl alcohol salicyl alcohol occurs as white monoclinic plates. It is soluble in water chloroform and the fixed and volatile oils freely soluble in alcohol and ether. The aqueous solution is neutral to litmus paper. It melts between 86 and 87 C.

Mix equal weights of saligenin and aniline boil for five minutes cool recrystallize once from alcohol the melting point falls between 97 and 103 C (ortho-hydroxy benzyl aniline melting point of pure substance 108 C). Saligenin is not precipitated by the usual alkaloidal reagents. Add a few drops of ferric chloride solution to about 0.1 Cm. of saligenin the solution becomes bluish violet. Add a few drops of sulfuric acid to about 0.01 Gm of saligenin the particles instantly become cherry red while the acid is but slightly colored (distinction from other local anesthetic). Add 100 cc. of cold water to 0.3 Gm of saligenin in a beaker the substance is completely soluble and the solution is colorless (substances insoluble in cold water). Add 1 cc. of sodium hydroxide solution to 5 cc. of a saturated solution of saligenin there is no tinge of yellow (absence of salicyl aldehyde). Add 1 cc. of silver nitrate solution and 1 cc. of diluted nitric acid to 5 cc. of a saturated solution of saligenin not more than a slight opalescence appears (limit of chloride). Add 1 cc. of barium chloride solution and 1 cc. of diluted hydrochloric acid to 5 cc. of a saturated solution of saligenin no precipitate appears (absence of sulfate). Dissolve about 0.40 Gm of saligenin (weighed to the second decimal place) in 100 cc. of water add phosphotungstic acid and titrate with hundredth normal sodium hydroxide solution not more than 9 cc. is required (limit of acids).

Transfer about 1 Gm. of saligenin accurately weighed to a wide mouthed weighing bottle dry over phosphorus pentoxide for twenty-four hours the loss in weight is not more than 0.1 per cent. Incinerate about 1 Gm of saligenin accurately weighed the ash is not more than 0.05 per cent.

**DEXTROSE** (See New and Nonofficial Remedies 1935 p 200)

The following dosage forms have been accepted  
Sharp & Dohme Inc Philadelphia and Baltimore

**Dextrose U S P (d-Close)** 25 Gm 50 cc Ampule (Unbuffered). Each ampule contains dextrose U S P 25 Cms in distilled water to make 50 cc.

**Dextrose U S P (d-Close)** 5 Gm 50 cc Ampule (Buffered). Each ampule contains dextrose U S P 25 Cms in distilled water to make 50 cc buffered with sodium citrate 0.25 per cent.

## Committee on Foods

### ACCEPTED FOODS

THE FOLLOWING PRODUCTS HAVE BEEN ACCEPTED BY THE COMMITTEE ON FOODS OF THE AMERICAN MEDICAL ASSOCIATION FOLLOWING ANY NECESSARY CORRECTIONS OF THE LABELS AND ADVERTISING TO CONFORM TO THE RULES AND REGULATIONS. THESE PRODUCTS ARE APPROVED FOR ADVERTISING IN THE PUBLICATIONS OF THE AMERICAN MEDICAL ASSOCIATION AND FOR GENERAL PROMOTION TO THE PUBLIC. THEY WILL BE INCLUDED IN THE BOOK OF ACCEPTED FOODS TO BE PUBLISHED BY THE AMERICAN MEDICAL ASSOCIATION.

RAYMOND HERTWIG Secretary

### HERSHEY'S MILD AND MELLOW MILK CHOCOLATE WITH ALMONDS

**Manufacturer**—Hershey Chocolate Corporation, Hershey, Pa

**Description**—Milk chocolate containing sugar, cacao butter milk, roasted almonds and chocolate liquor

**Manufacture**—Milk chocolate prepared as described for Hershey's Milk Chocolate (THE JOURNAL, Feb 24 1934 p 606) is mixed with almonds roasted in cacao butter, molded into bars and automatically wrapped

**Analysis** (submitted by manufacturer Computed from separate analyses of Mild and Mellow Milk Chocolate and almonds and from the factory formula of preparation) —

|  | per cent |
|--|----------|
| Moisture   | 0.6      |
| Ash  | 1.7      |
| Ash insoluble in water                               | 1.3      |
| Ash insoluble in acid                                | 0.01     |
| Fat (ether extract)                                  | 37.8     |
| Milk fat   | 4.9      |
| Total nitrogen                                       | 1.4      |
| Protein (noncaffeine and nontheobromine N X 6.25)    | 8.8      |
| Casesin  | 3.7      |
| Sucrose  | 39.4     |
| Lactose  | 6.5      |
| Whole milk solids                                    | 16.8     |
| Crude fiber  | 0.5      |
| Carbohydrates other than crude fiber (by difference) | 50.5     |
| Theobromine  | 0.1      |
| Caffeine   | 0.01     |

\* By Prochnow's modification of the Beckurts-Frome method Arch d Pharmaz 247 698 1910

**Calories**—58 per gram 165 per ounce

**Claims of Manufacturer**—Complies with respective United States Department of Agriculture definition and standard

### DROMEDARY BRAND FLORIDA ORANGE GRAPEFRUIT JUICE (SUGAR SYRUP ADDED)

**Manufacturer**—The Hills Brothers Company New York

**Description**—A blend of the accepted Dromedary Grapefruit Juice—Sugar Syrup Added and Dromedary Orange Juice—Sugar Syrup Added (THE JOURNAL, Dec 22 1934 p 1949)

### MARGO CCB

#### VEGETABLE LECITHIN AND ASSOCIATED PHOSPHATIDES WITH COCONUT BUTTER

**Distributor**—American Lecithin Corporation Atlanta Ga and New York

**Manufacturer**—Hansa Muchle Hamburg, Germany

**Description**—Soy bean lecithin and associated phosphatides with about 25 per cent of coconut fat

**Manufacture**—The method of manufacture is essentially the same as described for Lexin (THE JOURNAL Dec 28 1935, page 2161) excepting that the lecithin residue is admixed with coconut fat (3 to 1)

**Analysis** (submitted by manufacturer) —

|                         | per cent |
|-------------------------|----------|
| Moisture                | 1.1      |
| Ash                     | 5.1      |
| Petroleum ether extract | 63.1     |
| Acetone extract         | 35.6     |
| Total nitrogen (N)      | 1.0      |
| Total phosphorus (P)    | 2.6      |

**Calories**—94 per gram 269 per ounce

**Claims of Manufacturer**—An emulsifying agent for use in foods. Contains readily assimilable phosphorus in organic form



# THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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SATURDAY, FEBRUARY 1, 1936

## MECHANISM OF CALCIFICATION

A number of theories have been proposed to explain the phenomenon of the deposition of calcium salts, chiefly calcium phosphate and carbonate, in certain animal tissues. One of the more widely quoted theories<sup>1</sup> attaches most importance to the tension of carbon dioxide in the tissue involved. Serum, it is pointed out, contains calcium and inorganic phosphorus in much higher concentrations than does water alone, partly because of the presence of carbon dioxide in rather large amounts. Likewise the carbon dioxide tension in active tissues is high and calcium salts remain in solution. In inactive tissues, however, much less carbon dioxide is present and the precipitation of calcium phosphate is thus decidedly favored. A comparison of the amount of carbon dioxide in tissues that are most susceptible to calcification, such as cartilage and the trabeculae of bone, with those not showing calcification bears out this hypothesis. The recent report<sup>2</sup> that more than 16 per cent of adult rats show spontaneous calcification in the pulmonary artery, a region of lowered carbon dioxide content, also may be considered as further evidence in support of the foregoing view.

Another theory<sup>3</sup> holds that the concentration of hydrogen ions in a given tissue is the chief factor controlling the deposition of calcium, an alkaline reaction favoring and an acid reaction retarding calcification. The frequency of calcium deposits in the alveoli of the lungs, the uriferous tubules and the gastric glands, areas possessing a slightly alkaline reaction because of the elimination of acid at these points, has been cited as evidence favoring the  $pH$  hypothesis.

It has also been suggested that an enzyme, phosphatase, plays a major part in calcification.<sup>4</sup> This catalyst,

which is known to be present in many tissues and in particularly high concentrations in the growing portions of the bones of young animals, apparently acts on phosphoric acid esters reaching the tissue, causing the local liberation of phosphate ions and the resultant deposition of calcium phosphate. Recently<sup>5</sup> further evidence that the concentration of phosphate ions in localized areas is an important factor in calcification has been reported. By the use of the ammonium molybdate test, it was shown that the cut end of a muscle contained more phosphate ions than did an uninjured surface. Sensitive electrical measurements demonstrated that the exposed surface was electronegative to the intact tissue. That the electronegative charge was due to the presence of an increased concentration of phosphate ions was further indicated by the fact that the difference of potential disappeared when calcium or barium ions were added to the injured surface and that electronegativity reappeared when the surface was treated with phosphoric acid or with disodium phosphate. Similar results were obtained from experiments on the injured surface of the arteries of dogs. Therefore this work suggests that local calcification of the intimal surface of arteries may result from a combination of calcium ions of the blood with phosphate ions from the injured surface and the subsequent formation of an insoluble calcium phosphate plaque. The role of the enzyme phosphatase in this reaction remains to be ascertained.

## THE HOSPITAL AND MEDICAL EDUCATION

The many functions which the teaching hospital is supposed to fulfill call for constant study and modification. No better illustration can be given of the thought and work necessary to keep a hospital in its place than the recent report of Dr. Eugene F. Du Bois,<sup>1</sup> physician-in-chief to the New York Hospital. The great menace in the medical sciences at the present time, according to Du Bois, is an overabundance of mediocrity. In a department such as medicine, mediocrity can never be eliminated, but at least certain measures can be taken to check its growth. There must be a spirit of self-examination, when comparisons with other institutions are made, only the best in the country are to be considered.

The problems of the hospital fall naturally into several divisions. The routine care of patients and the administration of drugs appear simple, yet they are extraordinarily complex, much more difficult than the fundamental sciences, because they involve not only these fundamental sciences but also the human element. The testing of a new drug or the evaluation of an old one requires a technic and judgment that can be

1 Howland John. Etiology and Pathogenesis of Rickets. *Medicine* 2: 349 (Nov.) 1923.

2 Hueper W. C. Spontaneous Arteriosclerosis in Rats. *Arch. Path.* 20: 708 (Nov.) 1935.

3 Hofmeister Franz. Ueber Ablagerung und Resorption von Kalksalzen in den Geweben. *Ergebn. d. Physiol.* 10: 429 1910.

4 Rehn R. The Possible Significance of Hexosephosphoric Esters in Calcification. *Biochem. J.* 17: 266 (1923).

5 Burge W. E., Orth O. S., Neid H. W., Ash J. and Krou R. Mechanism of Pathologic Calcification. *Arch. Path.* 20: 690 (Nov.) 1935.

1 Du Bois E. F. Report of the Physician in Chief, the New York Hospital. June 6, 1935.

obtained only by the long and strict mental discipline that prevails in hospitals permeated by the spirit of careful investigation. In this attitude the hospital ward has long had leadership. The importance of the dispensary adjunct in the care of patients has often been somewhat neglected. The primary purpose of the latter is the early recognition of disease and the prevention of serious developments. In the New York Hospital this function has been well served by the organization of one large general medical clinic and eleven small special clinics. The general medical clinic tries to perform the functions of the general practitioner, the family doctor, taking care of the great bulk of the patients and referring to the specialists only those who need their special methods of diagnosis or treatment.

Financial problems have, of course, loomed large in recent years. The Cornell Clinic, which was included in the present organization, had been operated for several years as a pay clinic that endeavored to provide adequate medical care for the so-called white collar class, which comes between the ordinary dispensary group and those who can afford to pay their private physician. The patients were charged on an average, \$1.50 a visit, and the doctors were paid at the rate of from \$5 to \$7 a session. In spite of small quarters, the professional work was maintained at a high standard and the doctors were able to afford to give a considerable amount of time to the clinic. The criticism on the part of the profession at large that the patients were diverted from private practice was met with the argument that the doctors were paid for their services. After the amalgamation no provision was made to pay the doctors, most of whom were suffering acutely from the effects of the depression. They found themselves treating in the dispensary patients whom they would be glad to treat in their own offices for the same fees. The resultant criticisms Dr. Du Bois feels, have been in the main justified and efforts are being made to correct some of the present faults.

There is no greater help in maintaining high hospital and dispensary standards than the continuous presence of medical students. As previously indicated emphasis has been placed in the dispensary on teaching and senior students now spend a greater proportion of their time there. The responsibility for training goes further than medical students and good facilities are desirable for those more advanced. Although interns are given much responsibility they are carefully supervised. The residents who have all previously served internships, obtain a broader experience in special clinics and laboratories and in consultations. The junior members of the attending staff work in the wards and in the dispensary and help in the teaching. Many meetings are organized for the purpose of mutual instruction.

The problem of the part-time and the full-time staff has not proved especially difficult. For the most part there has been harmonious cooperation between the two

groups and Dr. Bois feels, judging from his personal experiences with both forms, that the quality of work does not differ materially. Research is an integral part of the function of the teaching hospital. Because of the close affiliation of the Russell Sage Institute of Pathology and the good equipment of the various departments, both clinical and fundamental research find satisfactory encouragement. The importance of this fact cannot be overestimated, since it is clearly recognized that it is impossible to obtain the services of the best clinicians in an institution that does not foster research.

#### ETIOLOGY AND TREATMENT OF SPRUE

Adequately financed group investigation frequently yields practical results of great benefit to mankind. The information compiled in Puerto Rico by the members of the Commission of the Rockefeller Foundation for the Study of Anemia, supplemented by animal experimentation at the Hospital of the Rockefeller Institute for Medical Research in New York, is an example of the value of such well organized investigation. The data on the etiology and treatment of sprue<sup>1</sup> are now available, particularly as they concern the conflict between the infectious and the deficiency theories of its causation. The study included careful observations of approximately ninety patients in Puerto Rico, supplemented by special studies of patients at the Thorndike Memorial Laboratory of the Boston City Hospital. Subsequent experiments on animals also are reported.

The blood picture in sprue has frequently been described and the resemblance of the macrocytic anemia to pernicious anemia pointed out. The disturbances of the gastro-intestinal tract have related sprue not only to anemia but likewise to pellagra. In fact, in each of the three diseases there are associated disturbances of the gastro-intestinal tract, of the hematopoietic mechanism and of the central nervous system. True, in different individuals with each disease the extent of the involvement of any of the three systems is variable. Nevertheless it is striking that there has been developed for each of these conditions a method of treatment based on a dietary regimen including meat and milk. The investigations under the auspices of the Rockefeller Foundation have included a detailed study of the influence of dietary factors, the so-called extrinsic factors, and the etiologic significance of a lack of the gastric or intrinsic factor. The studies on the patients taken together with the results of the administration of defective diets to animals suggest that sprue is a deficiency disease closely related to Addisonian pernicious anemia. In sprue as in pernicious anemia there is involved the failure of a reaction between an extrinsic factor in the diet associated in several foods with vitamin B<sub>12</sub> (G<sub>1</sub>) and an intrinsic factor present in the gastric contents

<sup>1</sup> G. L. W. B. Rhee, C. P. Lawson, H. A. and Payne, C. C. Etiology and Treatment of Sprue. Arch. Int. Med. 50 (7) (Oct.) 1935

of the normal person. In addition, at times there is difficulty with the gastro-intestinal absorption of substances resulting from this hematopoietic reaction. Obviously in different patients with sprue the relative importance of these three factors, namely, the extrinsic factor, the intrinsic factor and absorption, will vary. Dietary deficiency of iron, sometimes accentuated by gastric anacidity and intestinal permeability, may be of importance.

This clear cut exposition of the basis of the etiology of sprue both in the clinical cases and in the experimental studies is supported by the efficacious results obtained by dietotherapy. In experimentally produced conditions simulating sprue, produced in dogs by withholding the dietary extrinsic factor, relief is supplied by liver extract. It seemed likely, therefore, that appropriate dietary defects in man may likewise initiate the physiologic disturbances of the alimentary tract subsequently involved in the production of sprue. This is supported by the effectiveness of the administration of adequate doses of liver extract, especially by parenteral injection. The accessory use of iron is indicated for certain patients. Although there may be objections to the analogies drawn between sprue and pernicious anemia, some of the distinctions that may be pointed out are of little practical importance. The remarkable benefit resulting from the parenteral administration of liver extract to severely sick patients with both diseases would seem to indicate a close relationship between sprue and pernicious anemia, our knowledge of these conditions, particularly of the former disease, has been advanced by the foregoing observations.

## Current Comment

### HOW CARS GO OUT OF CONTROL

There is a type of automobile accident in which the explanation commonly offered is that "the car went out of control." In many cases, however, according to Henderson,<sup>1</sup> subsequent examination demonstrates that the steering gear, motor and brakes were in good order. It is hence really the motorist who "goes out of control" and the explanation for his action lies in an instinctive reflex, which submerges the conditioned reflex built up by driving a car. The reflex concerned is the "self-righting reflex" which is excited by any sudden disturbance of equilibrium. It is a complex reaction in which the head, body, arms and legs are all involved. When it occurs in the driver of a car, the impulse that dominates him is to steady himself in his seat. He grasps the wheel with his whole strength. His arms stiffen, and he is as likely to steer off the road as along it. Simultaneously and as part of the same nervous and muscular complex he performs another act so instinctive that in most cases he is entirely unconscious of it. His legs are forcibly extended and his feet are

pressed down hard. It is the muscular act that Sherrington, who discovered it in the dog, named the "extensor thrust." It is thus obvious that in drivers it will result in sudden hard pressure on the accelerator pedal. Since it is impossible to change this reflex, which may occur following an initial jolt or even a mental start, some other means of preventing this type of accident must be discovered. On reviewing a considerable number of accidents, Henderson feels that at least 10 per cent are due to the initiation of this reflex. It is characteristic that the thrust occurs in both legs and hence a clue to the necessary safety measures is readily available. There are some obvious disadvantages in introducing a method by which heavy pressure on the accelerator pedal will close the throttle and slow the car rather than speed it up. There are no similar objections, however, to the introduction of a safety factor under the left foot which on a similar extensor thrust would counteract the tendency to acceleration caused by the right foot. A pedal under the left foot would involve no great difficulties of adjustment for those already accustomed to driving. It would, however, introduce an added factor of safety, which might result in a material decrease in road accidents.

### RECURRENCE IN ACUTE INFECTIOUS DISEASES OF CHILDHOOD

Most textbooks in medicine assert that one attack of an acute infectious disease in childhood (except influenza, erysipelas and pneumonia) confers a lasting immunity. Ryhiner,<sup>1</sup> in a review of the subject, correctly states that the majority of cases of this type of illness do not come into the hospital, hence hospital statistics would not satisfactorily reflect the true situation. In the sixteen years between 1919 and 1935 he observed more than 5,000 cases of acute infectious diseases. Of the 1,926 cases of measles, a true second infection was observed only twice, there is, he states, a definite difference between relapse with the new appearance of a typical exanthem a few weeks after the first attack. He did not observe a single recurrence of chickenpox in the 599 cases of his series. A similar situation exists with regard to a smaller (361) number of cases of mumps. There were too few cases of diphtheria on which to base a conclusion, though no recurrences were noted. The literature, however, reports many such instances. In whooping cough the immunity seems to be relatively slight. When second attacks occur they seem to be usually at a long interval after the first. Such attacks, however, do not seem to be lighter than the first. The situation with regard to scarlet fever is interesting. Recurrent infections were formerly considered rare but are now believed to be quite common. Out of 220 cases there were seven unquestioned examples of second attacks. It is apparent therefore, that the question can best be answered by a study of the individual diseases involved rather than a blanket understanding that all these diseases confer a lasting immunity.

<sup>1</sup> Henderson, Vandell. How Cars Go Out of Control. Analysis of the Driver's Reflexes. Science 82: 603 (Dec. 27) 1935.

<sup>1</sup> Ryhiner, P. Wiederholte Erkrankung an den akuten Infektionskrankheiten des Kindesalters. Schweiz. med. Wchnschr. 65: 813 (Aug. 31) 1935.

## Association News

### RADIO BROADCASTS

The American Medical Association broadcasts over WEAf, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p m eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers the toast 'Ladies and gentlemen your health!' The theme of the program is repeated each week in the opening announcement which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night, for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

**Red Network**—The stations on the Red network of the National Broadcasting Company are WEAT, WEEL, WTIC, WJAR, WTAG, WCSH, KYW, WFBR, WRC, WGY, WBEN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

**Pacific Network**—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

February 4 Pneumonia, W W Bauer M.D.  
February 11 Little Tips on Home Hygiene W W Bauer M.D.  
February 18 Heart Disease, Morris Fishbein M.D.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF VALUE OF MORE OR LESS GENERAL INTEREST SUCH AS REFLECT TO SOCIETY ACTIVITIES  
AFW HOSPITALS EDUCATION PUBLIC HEALTH ETC.)

### ALABAMA

**The Fifty-Seventh Full Time Health Unit**—Early in December a full time health unit was set up in Coffee County, bringing the total of full time health departments in the state to fifty seven. Ten counties remain without organized health service. Between 1927 and 1932 fifty-four counties were organized, but during the depression eight discontinued their service, newspapers reported. Dr Henry T. Donovan Elba, is the health officer.

### CALIFORNIA

**Association Day at San Diego Fair**—May 26 has been designated as California Medical Association Day at the 1936 California Pacific International Exposition San Diego, which opens February 12 and will continue to September 9. Activities will be centered in the Palace of Medical Sciences, and exhibits will be sponsored among others by the American Medical Association the San Diego County Medical Society, the California Medical Association the Los Angeles City and County Health Department the Chicago Roentgen Club and the Southern California Pathologists Association. In addition to the medical exhibits there will be lectures and daily presentations of motion pictures on medical subjects.

**Sentenced for Illegal Practice**—J. E. S. C. Morandi, a Negro preacher, pleaded guilty to three counts of representing himself as a physician, December 6 and was sentenced to pay a fine of \$100 or serve twenty five days in jail on each count. He was committed to jail on the first count and the sentence on the second and third counts was suspended. In San Diego Morandi posed as a preacher and also held himself out as a physician offering to treat members of his church. According to the California State Board of Medical Examiners records show that he was arrested in Des Moines March 4, 1934 although the charge was not mentioned. He was also arrested in Ashland Ky., Feb. 7, 1934 and held for Resauke Ar on a statutory charge.

### DISTRICT OF COLUMBIA

**Medical Bills in Congress**—The following bills have been approved by the President S 1016, empowering the health officer of the District of Columbia to authorize the disinterment and reinterment of bodies in cases in which death has been caused by certain contagious diseases S 2013 directing the Commission on Licensure to Practice the Healing Art in the District of Columbia to issue a license to practice the healing art to Dr Pak Chue Chan S 2939 directing the Commission on Licensure to Practice the Healing Art to issue a license to practice the healing art in the District of Columbia to Dr Ronald A. Cox.

**Health at Washington**—Telegraphic reports to the U S Department of Commerce from eighty-six cities with a total population of 37 million, for the week ended January 18 indicate that the highest mortality rate (22.8) appears for Washington and for the group of cities as a whole 13.2. The mortality rate for Washington for the corresponding period last year was 18.6 and for the group of cities, 13. The annual rate for eighty-six cities for the three weeks of 1936 was 13.7 as against a rate of 13.5 for the corresponding period of the previous year. Caution should be used in the interpretation of these weekly figures, as they fluctuate widely. The fact that some cities are hospital centers for large areas outside the city limits or have a large Negro population may tend to increase the death rate.

### ILLINOIS

**Cancer Survey in Illinois**—Dr Frank L. Rector Evanston, field representative of the American Society for the Control of Cancer, will in the near future conduct a survey of cancer in Illinois at the request of the Illinois State Medical Society.

**Society News**—Dr M. Herbert Barker, Chicago discussed pneumonia before the Whiteside County Medical Society, January 23, in Sterling—Dr Luke W. Hunt, Chicago, discussed "Scarlet Fever Immunization and Treatment" before the Kankakee County Medical Society, January 9—Dr Harry M. Richter, Chicago, discussed surgical aspects of gallbladder disease before the Peoria City Medical Society, January 21.

### Chicago

**Prenatal Clinics in the Evening**—Two evening clinics for women needing antepartum care were recently opened under the direction of the city health department. Free treatment will be given to women who work during the day. At the opening of the first clinic at 6312 Wentworth Avenue nurses and physicians on the staff of the Chicago Lying-in Hospital conducted examinations and lectured on antepartum care.

**Meeting of Bacteriologists**—The Society of Illinois Bacteriologists presented the following program at its meeting, January 17, at the Chicago Woman's Club:

Dr. Frederick O. Tonney Bacteriology and Public Health  
Lloyd B. Jensen Ph.D. Bacteriology and the Meat Packing Industry  
L. S. McClung Ph.D. Maywood Ill. The Agglutination Reaction in the Classification of Spore Forming Anaerobes  
George K. Link Ph.D. Plant Nutrition and Disease Resistance

**Symposium on Chronic Arthritis**—The Chicago Society for the Control of Rheumatic Disease sponsored a symposium on chronic arthritis at the meeting of the Aux Plaines branch of the Chicago Medical Society, January 10. Speakers were Dr. Ralph Pemberton, professor of medicine University of Pennsylvania Graduate School of Medicine Philadelphia on "The Medical Management of Chronic Arthritis" and Dr. Robert B. Osgood, professor of orthopedic surgery emeritus, Harvard Medical School Boston, "The Orthopedic Management of Chronic Arthritis." Dr. Ernest E. Irons, dean and clinical professor of medicine, Rush Medical College, and Dr. John D. Ellis, associate in surgery Northwestern University School of Medicine discussed the papers.

### IOWA

**Society News**—Speakers before the Bremer County Medical Society in Waverly December 5, included Dr. Walter I. Biering Des Moines on "Economics of Disease Prevention."—The Greene County Medical Society celebrated "one hundred and fifty two years of medical practice" at its meeting in Jefferson December 19 with Drs. William M. Young, Jefferson Benjamin C. Hamilton Sr., Jefferson and John H. Shipley Rippey as guests of honor.—At a meeting of the Jackson County Medical Society in Maquoketa December 20 Dr. James S. McQuiston and William E. Brown both of Cedar Rapids discussed "Gait and Movement Disorders and Use of the Obstetrical Forcep" respectively.

**Graduate Course at Ames**—The speakers bureau of the state medical society will sponsor a course in diagnosis and therapeutics at Ames about the middle of February under the

auspices of the Boone and Story county medical societies. The state medical journal announces that the following program has been arranged:

Dr Percival Bailey, Chicago, Therapeutics in Neurology  
 Dr Oscar H Plant, Iowa City, Recent Advances in Therapeutics  
 Dr Erwin R Schmidt, Madison Wis, Treatment of Diseases of the Gallbladder  
 Dr Henry E Michelson, Minneapolis, Diagnosis and Treatment of Common Skin Disorders  
 Karl W Stenstrom, Ph.D., Minneapolis, Radiation Therapy  
 Dr Charles D Greer, Minneapolis, Treatment of Infections of the Genito-Urinary Tract  
 Dr Cecil J Watson, Minneapolis, Modern Treatment of Anemia  
 Dr Walter L Palmer, Chicago, Treatment of Gastro-Intestinal Disorders

Tentative plans are being made to offer a similar course at Sheldon and to conduct laboratory courses at Creston, Oskaloosa and either Fairfield or Burlington.

### MAINE

**Society News**—Dr Shields Warren, Boston, read a paper before the Cumberland County Medical Association, December 19, on 'Pathology of Malignant Disease with Relation to Treatment.'—The Kennebec County Medical Association was addressed in Augusta, December 19, among others, by Dr Orwel F DeVeaux on 'Diabetes with Gangrene.'—Dr Edward H. Risley, Waterville, presented a paper before a recent meeting of the Sagadahoc County Medical Society, among others on 'Management of Postoperative Nausea and Vomiting.'—At a meeting of the Portland Medical Club, January 7, Dr Harry Eugene Macdonald, Jr., read a paper on neurosurgical congenital anomalies.

**Clinics at Maine General Hospital**—The Central Maine General Hospital, Lewiston, has been holding a series of graduate teaching clinics. Future clinics will be conducted by:

Dr William C. Quinby, Boston, February 28, Daily Problems in the Treatment of Patients with Genito-Urinary Disturbances  
 Dr William B. Castle, Boston, March 27, Medical Aspects of Diseases of the Colon  
 Dr Soma Weiss, Boston, April 17, Clinical Use of Sedatives with Particular Reference to the Barbituric Acid Derivatives  
 Dr Otto J. Hermann, Boston, May 22, Some Aspects of the Management of Fractures

Clinics were held on January 24 by Drs Siegfried Thannhauser, Boston, on functional tests in dietary treatment of liver disorders; Joseph H. Pratt, Boston, the neuroses; and Jacob Schloss, newer methods in diagnosis of gastric diseases.

### MASSACHUSETTS

**Bills Introduced**—S 321 proposes to direct the department of public health to investigate the necessity for and cost of constructing and maintaining a state hospital for the treatment of infantile paralysis or arthritis, or both. S 322 proposes to authorize the department of health to construct and maintain a health center for the treatment of infantile paralysis. S 388, to amend the medical practice act, proposes that one of the members of the board of registration in medicine shall be a graduate of Harvard University Medical School, one a graduate of Boston University School of Medicine, one a graduate of Tufts Medical School, one a graduate of the College of Physicians and Surgeons, one a graduate of the Middlesex College of Medicine and Surgery, and one a graduate of the Massachusetts College of Osteopathy. H 573 proposes to authorize the organization of corporations to operate non-profit hospital service plans for their subscribers or members and to exempt such corporations from the provisions of the state insurance laws and from public taxation. H 574 proposes to require hospitals receiving public support to permit any physician licensed under the medical practice act to practice within their confines. H 662 proposes to require before a physician may remove any organ of a patient's body (1) the consent of the patient and (2) a written explanation by the physician to the patient as to the necessity of the removal of any organ and to require further the preservation of any organ removed until the patient directs its disposal. H 757 proposes to forbid the manufacture and sale, for household use, of caustic potash, caustic soda or lye, oxalic acid or any of its salts containing the equivalent of 10 per cent or more of oxalic acid or any ammonia water in concentration of 5 per cent or more unless the container as retailed bears the word 'poison' conspicuously displayed on the label and also contains the name of applicable antidotes. H 844, to amend the pharmacy practice act, proposes that the provisions of the pharmacy practice act shall not apply to the manufacture or sale of patent and proprietary medicines provided those intended for internal use do not contain salicylic acid, barbituric acid, acetanilid, phenol, bromine, iodine or any of their salts or derivatives. H 846 proposes to require the physician in attendance at the birth of a child to treat the child's eyes within two hours after birth with a prophylactic remedy furnished by the state.

H 949 proposes (1) that no person shall be required to submit to any form of vaccination or inoculation as a condition precedent to admission to any school or public institution, or to the exercise of any right, the performance of any duty or the enjoyment of any privilege, and (2) that it shall be unlawful for any person to vaccinate or inoculate a child or an adult without the written consent of the parents or guardians of the child or the written consent of the adult. H 1045 proposes to authorize liens for physicians and hospitals, treating persons injured through the negligence of others, on any judgment settlement or compromise obtained by the injured persons by reason of their injuries. The lien, however, is not to apply to awards recovered under the workmen's compensation act. H 1256 proposes to require each party to a proposed marriage, as a condition precedent to the obtaining of a license to marry, to present to the appropriate official a certificate from a physician that such party is normal mentally and physically and is not afflicted with any communicable disease. H 1408, to amend the workmen's compensation act, proposes to require an injured employee, in selecting a physician to treat him for industrial injuries, to select a physician named in a list compiled by the department of industrial accidents. The department is to divide the commonwealth into districts and prepare a list of all registered physicians within each district who make application to the department for enrollment on that list. H 1444 proposes to create an independent board of chiropractic examiners and to regulate the practice of chiropractic. An applicant for a license need have only a high school education and have graduated from chiropractic college after personal attendance of three school years of not less than six months each. A licensee is to be authorized 'to practice chiropractic in all its branches as taught and practiced by the recognized schools and colleges of chiropractic' but is not to be authorized to practice obstetrics or to administer drugs or medicines or to perform surgical operations. H 1458 proposes to create a board of magnetic healers' examination and registration and to regulate the practice of magnetic healing. Apparently an applicant for such a license need demonstrate to the board only that he is 'capable of examining nerve conditions by his magnetic power'. Magnetic healing is defined as 'the science of reviving and producing life and circulation in the nerve system and cells so as to heal all nerve affections'.

### MICHIGAN

**Society News**—At a meeting of the Academy of Surgery of Detroit, December 12, Dr Frederick H. Cole discussed 'Prostatectomy and Transurethral Resection.'—Dr Clarence I. Owen, Detroit, was chosen president elect of the Michigan Pathological Society at the annual meeting in Ann Arbor, December 14.—Dr Charles M. McKenna, Chicago, discussed 'Surgical Kidney with Especial Reference to Stones' before the Calhoun County Medical Society, January 7.

**Dr McQuiggan to Serve as Coordinator**—Dr Paul F. McQuiggan, Detroit, was appointed director of a newly established medical department of the Wayne County Probate Court, December 1. For the time being, Dr McQuiggan will serve as coordinator in the administration of the law authorizing free medical care for the indigent. This law, together with a similar one having to do with children, was amended in 1933 to provide for local hospitalization and remuneration for physicians and surgeons' services. The keynote of the law is rehabilitation.

**Memorial Lectures**—A series of graduate lectures on diseases of the gastro-intestinal tract opened at North End Clinic, Detroit, January 9, with Dr Andrew C. Ivy, Chicago, as the speaker. His subject was 'The Important Phases of the Applied Physiology of the Gastro-Intestinal and Biliary Tract.' These lectures are designated 'The Dr Max Ballin Memorial Lectures' and other speakers in the series are:

Dr B. B. Vincent, Lyon, January 16, Philadelphia, Diagnosis and Management of Cholecystitis  
 Dr Clark D. Brooks, January 23, Indication for Surgery in Gallbladder Disease and Postoperative Results, Dr Arthur R. Bloom, Diagnosis of Gallbladder Disease by X-Ray  
 Dr Louis J. Hirschman, January 30, Pitfalls in the Diagnosis of Colon Disease, Dr Solomon G. Meyers, Interpretation of Gastro-Intestinal Symptoms  
 Dr Frederick A. Collier, Ann Arbor, February 6, Indications for Surgery in Peptic Ulcer and Postoperative Results  
 Dr Leon Bloch, Chicago, February 13, Non-Gastro-Intestinal Diseases Simulating Gastro-Intestinal Diseases (Excluding Neurosis)  
 Dr Frederick G. Buesser, February 20, Management of the Peptic Ulcer Patient, Dr David J. Sandweiss, Newer Methods in the Treatment of Peptic Ulcer

The Dr Isaac L. Polozker Memorial Lecture will conclude the series, February 27, Dr Walter C. Alvarez, Rochester, Minn., will discuss 'Nervous Dyspepsia'.



## MISSISSIPPI

**New Health Unit**—The Marshall County Health Department was recently created on a full time basis, newspapers report. Dr Vernon B Harrison, formerly health officer of Coahoma County, has been appointed health officer of the new unit. The appointment of Dr William T Harper, Fayette, as director of the part time health unit in Jefferson County is also announced.

**Society News**—At the annual meeting of the Central Medical Society in Jackson, December 5, speakers were Drs Paul G Gamble, Greenville, on "Hydronephrosis Due to Aberrant Vessels", John Gould Gardner, Columbia, "Injuries About the Elbow," and James S McLester, Birmingham, Ala., President, American Medical Association, "Borderline States of Nutritive Failure."—The Clarksdale and Six Counties Medical Society was addressed recently, among others, by Drs J H Eugene Rosamond, Memphis, on "Appendicitis in Children," and Leonidas B Austin, Rosedale, "Pathology of Syphilis."—Dr James H Green Tupelo, among others, addressed the North-east Mississippi Thirteen Counties Medical Society in Tupelo, December 13, on "Treatment of Peripheral Vascular Disease by Means of Alternating Positive and Negative Pressure."—Dr Ira B Seale, Holly Springs, discussed the care and feeding of infants before the Pontotoc County Medical Society in Pontotoc, December 3.

## NEW YORK

**Society News**—Dr Edward G Whipple, Rochester, addressed the Ontario County Medical Society, Canandaigua, at its quarterly meeting, January 14, on "Diagnosis and Treatment of Lobar Pneumonia."

**Appointments to Public Health Council**—Governor Lehman appointed two new members to the Public Health Council, January 4, under a new law increasing the membership to eight, Drs George Bachr, New York, and Clayton W Greene, Buffalo. Dr Herman G Weiskotten, dean Syracuse University School of Medicine, was appointed to succeed Dr Frederick F Russell, resigned. Dr Simon Flexner, New York, was reappointed chairman.

**Resolution on Medical Publicity**—The executive committee of the Medical Society of the State of New York, January 9, adopted resolutions on publicity to inform the public of matters that are the responsibility of organized medicine. The committee on medical trends having found that the point of view of organized medicine cannot be effectively presented through the lay press without direct quotation of individual physicians, the resolution recommended that the rules discouraging personal publicity be relaxed to the extent that requests of the committee on medical trends for statements from physicians be freely granted. It is especially desirable the resolution continued, that officers of state district or county medical societies, as well as chairmen of committees and subcommittees be quoted on matters pertaining to the work of the society and, in the event that they are not available, members of such committees and subcommittees.

## New York City

**Personal**—The New York Physical Therapy Society gave a dinner in honor of Dr A Bern Hirsh January 8, in recognition of his services in the field of physical therapy. Seventy-five persons attended.—Dr Edward D Wisely retired in December after twenty five years as treasurer of the Richmond County Medical Society. The society gave him an oxeye desk set.

**New Unit at Harlem Hospital**—A new women's pavilion of nearly 100 beds was dedicated at Harlem Hospital January 4. The building increases the adult bed capacity of the hospital to 607 and adds 114 bassinets. The total cost was \$2,500,000. Mayor La Guardia was the principal speaker at the dedication at which Dr Sigismund S Goldwater, commissioner of hospitals, presided.

**Society News**—Dr Charles Mazer Philadelphia addressed the Bronx County Medical Society January 15 on "Uterine Hemorrhage."—At a meeting of the Medical Society of the County of New York January 27 speakers were Drs John A Hartwell on "The New York Academy of Medicine and Its Relation to the County Medical Society," Frederic I Southern, "The State and County Medical Society," and Haven Emerson, "The Hospital Survey for New York."—Dr William D Stroud Philadelphia addressed the Medical Society of the County of King January 21 on diagnosis and treatment of cardiovascular disease.

## NORTH CAROLINA

**Dr Rosenau Appointed to Faculty of State University**—Dr Milton J Rosenau, for many years Charles Wilder professor of preventive medicine and hygiene at Harvard Medical School and in the Harvard School of Public Health, Boston, has been appointed director of a new division of public health at the University of North Carolina School of Medicine, Chapel Hill. The new division, which began operation January 15, is conducted in cooperation with the state board of health, members of whose executive staff will form part of the teaching staff. Dr Rosenau, who retired from Harvard in 1935, was graduated from the University of Pennsylvania Department of Medicine in 1889 and was for ten years director of the Hygienic Laboratory (now the National Institute of Health) of the U S Public Health Service. In 1909 he was appointed to the Harvard professorship in the medical school and in 1922 in the school of public health. From 1913 to 1922 he was director of the school of public health operated jointly by Harvard and Massachusetts Institute of Technology.

## OHIO

**Society News**—Prof George Sperti, Cincinnati addressed the Montgomery County Medical Society, Dayton January 17 on "Biophysics as It Applies to Medicine."—Dr Elmer R Arn, Dayton, among others, addressed the Greene County Medical Society, Xenia, December 3 on carcinoma of the stomach and intestine.—Dr Henry Kennon Dunham, Cincinnati, addressed the Richland County Medical Society, Mansfield, December 5, on "The Child and Tuberculosis."—Dr William S Middleton, Madison, Wis., addressed the Academy of Medicine of Cincinnati, January 7, on "Postoperative Pulmonary Complications."—Dr Thomas M Rivers, New York, delivered a Bunts lecture at the Cleveland Clinic, January 20, on "Filterable Viruses."

**New Health Officers**—Dr Thomas W Mahoney, Medina health officer of Medina County, has been appointed health officer of Lucas County with headquarters in Toledo succeeding Dr Milton R Kukuk. Dr John L Jones, Cleveland was chosen to succeed Dr Mahoney. Dr Charles F Thompson was recently appointed health officer of Noble County to succeed Dr George M Mason. Dr Harry G Southard, Marysville, former state health director, has been made health officer of Union County, succeeding Dr John D Boylan. Milford Center Dr Chester A Bennett Strasburg, has succeeded Dr Joseph Bickensderfer, New Philadelphia, as health officer of Tuscarawas County, and Dr J Will Payne Willow Wood has succeeded Dr Forrest R Stewart, Ironton in Lawrence County.

## OKLAHOMA

**Graduate Course**—The Oklahoma State Medical Association announces that a graduate course will be presented in five cities in the western part of the state beginning February 3. Lecturers, all of Cleveland, will be Drs Arthur Carlton Ernstene on "Use of Drugs in the Treatment of Heart Disease" and Differential Diagnosis of Coronary Artery Disease, Charles L Hartsock, "Treatment of Peptic Ulcer" and "Diagnosis and Treatment of Functional Digestive Disturbances," and Robert S Dinsmore Jr "Thyroid Problems and Handling of the Patient with Gallbladder Disease." The towns chosen for the course are Oklahoma City, El Reno, Lind, Alva and Woodward.

**Research Fellowships Available**—The University of Oklahoma School of Medicine announces that three research fellowships in the medical sciences are available at the school through a fund provided by the legislature. Two will carry stipends of \$1,200 each and the other a stipend of \$1,500. Special equipment and supplies will be furnished. Applicants must furnish certified data showing their qualifications as research workers, the problems they wish to pursue and estimates of the cost of apparatus and supplies needed. Each applicant must also furnish the names of three persons well known in the field of medical education with whom the university may communicate. Any one wishing to obtain one of these fellowships should apply to the dean, Dr Robert L Patterson 501 East Thirteenth Street, Oklahoma City.

## PENNSYLVANIA

**Annual Tuberculosis Meeting**—The forty fourth annual meeting of the Pennsylvania Tuberculosis Society will be held in Allentown February 25-26. Tuberculosis Prevention and Control in Relation to Industry and The Contribution of School Authorities in Tuberculosis Control Measures will be the topics for discussion. Speakers will include Drs Kendall Emerson and Haines H Tellow of New York, William A

Sawyer, Rochester, N. Y. Frederic Maurice McPhedran, George M. Piersol and Harry D. Lees, Philadelphia, and Mr. William G. Moorhead, state superintendent of public instruction. The Pennsylvania Conference on Social Welfare will hold its annual meeting immediately after the tuberculosis meeting.

### Philadelphia

**Grant for Study of Anesthetics**—The American Philosophical Society has made a grant of \$2,500 to the Woman's Medical College of Pennsylvania for a study of the action of anesthetics by the departments of physiology, physiologic chemistry and pathology. Dr. Esther M. Greisheimer will direct the research in physiology, Marion Fay, Ph.D., in physiologic chemistry and Dr. Helen Ingleby in pathology.

**County Society to Sponsor Graduate Institute**—The Philadelphia County Medical Society announces a graduate institute to be held at the Bellevue-Stratford Hotel, April 20-24. The subject will be cardiorenal diseases and their ramifications, on which a program of special interest to general practitioners has been prepared with lecturers from among the foremost teachers in Philadelphia. For further information address Philadelphia County Medical Society, Post Graduate Institute, Twenty-First and Spruce streets.

**Prepaid Medical Service Subject to Insurance Laws**—Dr. Charles Dudley Saul, head of an organization furnishing medical service to subscribers at \$2 a month, was ordered to appear before the state insurance commissioner, January 28, to show cause why he should not be prosecuted for violation of the insurance laws, newspapers reported January 20. The commissioner is quoted as saying in a letter to Dr. Saul that as a result of an investigation it was decided that the Saul clinic is engaged in the business of insurance and is subject to the insurance laws. It was said Dr. Saul had about 700 subscribers, including members of the Newspaper Guild of Philadelphia and Camden, welfare workers, federal employees and residents of a model housing project built by the government.

**Society News**—Among speakers who addressed the Physiological Society of Philadelphia, January 20, were Drs. Cyril N. H. Long and Francis D. W. Lukens, on "The Effect of the Adrenotropic Hormone of the Anterior Pituitary upon Hypophysectomized-Depancreatized (Houssay) Cats" and Miss F. G. Fry, "Effect of Adrenalectomy on the Response of the Rat to the Ketogenic Principle of the Anterior Pituitary."—Drs. Herman O. Mosenthal, New York, and Julius Friedewald, Baltimore, addressed a joint meeting of the North End Medical Society and the north branch of the Philadelphia County Medical Society, January 23, on "Treatment of Chronic Nephritis by the General Practitioner" and "A Consideration of Gastritis, Gastric Ulcer and Cancer and the Anemias Related to Gastric Secretory Disturbances" respectively.—Dr. John M. Fisher was elected president of the Aid Association of the Philadelphia County Medical Society, January 14. The association disbursed \$5,895.30 during 1935.

### Pittsburgh

**Dr. Buchanan Honored**—Dr. John J. Buchanan, for fifty-two years a member of the Allegheny County Medical Society, was guest of honor at the meeting of the society, January 21, at the Hotel Schenley. A program was presented with the following speakers: Drs. Dean Lewis, Baltimore, "Endothelial Tumors"; Edward C. Rosenow, Rochester, Minn., "Focal Infection and Elective Localization"; and Joseph Eastman Sheehan, New York, "Application of Skin Grafts (Tube Grafts) Correction of Unilateral Facial Paralysis." At the testimonial dinner, Dr. Richard J. Behan, president of the society, was toastmaster. Addresses were made by Dr. George T. Vaughan, emeritus professor of surgery, Georgetown University School of Medicine, Washington, D. C.; Dr. Holland H. Donaldson, surgeon, Mercy Hospital; and W. W. Stoner, president, Allegheny County Bar Association. Dr. Alexander H. Colwell, Pittsburgh, president of the Medical Society of the State of Pennsylvania, presented a medallion to Dr. Buchanan, who was a charter member of the Allegheny County society and president in 1920.

### RHODE ISLAND

**Bills Introduced**—S. 27 proposes to grant to hospitals, physicians, nurses or dentists treating persons injured through the fault of others the right to liens on any judgments, compromises or settlements received by the injured persons on account of their injuries. H. 591 to amend the workmen's compensation act proposes to make some twenty-seven stated occupational diseases compensable. Included among these diseases are anthrax, lead, zinc, mercury, phosphorus and arsenic.

poisoning, poisoning by wood alcohol, poisoning by benzene (benzol) or its nitro, hydro, hydroxy, or amido derivatives or by carbon bisulfide or by nitric fumes, chrome ulceration, epitheliomatous cancer, glanders, compressed air illness, miners' disease and dermatitis. H. 598 proposes to create a commission to study the desirability of establishing a health insurance fund and to report its conclusions to the general assembly not later than March 5.

### TEXAS

**"The Exhibit of Life"**—Plans for an exhibit at the Texas Central Centennial Exposition to be held this year in Dallas, to be known as the "Exhibit of Life," were outlined at a conference of representatives of educational institutions of the state in Dallas, December 15. Dr. Edward H. Cary, Dallas, was chairman of the conference. The exhibit will cover the development of all the sciences useful in the propagation and care of human life. The Texas State Medical Association will probably prepare as its share an exhibit of the medical history of Texas and participation of the medical profession of the state in the development of the practice of medicine.

**Society News**—Dr. Jeffrey C. Michael, Houston, addressed the Brazos-Robertson Counties Medical Society at Hearne, December 10, on diagnosis and treatment of common skin diseases.—Drs. Homer B. Allen, Brownwood, and James C. Terrell, Stephenville, addressed the Eastland Callahan Counties Medical Society in December on "Full Thickness Skin Grafting" and "Endometrial Cyst," respectively.—Dr. Elliott M. Mendenhall, Dallas, discussed tuberculosis at a meeting of the Gray-Wheeler Counties Medical Society in December.—At a meeting of the Tarrant County Medical Society, Fort Worth, in December, economic questions were discussed by Drs. Edward H. Cary, Dallas, Louie O. Godley and Thomas B. Bond, Fort Worth.—Drs. Charles Frank Brown and Harold M. Block, Dallas, addressed the Dallas County Medical Society, January 9, on "Juvenile Obesity" and "Birth Injuries in the Eyes of the New-Born," respectively.

### VIRGINIA

**Bill Introduced**—H. 53, to amend the dental practice act, proposes to impose certain restrictions on advertising in connection with the practice of dentistry. The board of dental examiners is to be authorized to revoke the license of any licensee "advertising professional superiority or the performance of professional service in a superior manner, or advertising prices, terms, or fees for professional services or advertising by means of large display, glaring light signs, or containing as a part thereof the representation of a tooth bridge work, or any portion of the human head, or employing or making use of advertising solicitors or free publicity press agents, or advertising any free dental work or free examination, or advertising to guarantee any dental service."

### WASHINGTON

**Anniversary of Surgical Society**—The silver anniversary of the Seattle Surgical Society was celebrated at its annual meeting, January 31 and February 1, at the King County Hospital. Speakers were as follows:

- Dr. Frank Hinman, San Francisco: Surgical Principles Involved in Uretero-Intestinal Implantation.
- Dr. Waltham Walters, Rochester, Minn.: Recent Advances in Treatment of Lesions of the Biliary Tract. Surgical Lesions of the Suprarenal Gland, Cortex and Medulla.
- Dr. Richard B. Dillehunt, Portland, Ore.: Injuries of the Elbow in Children.
- Dr. Verne C. Hunt, Los Angeles: Achievements in the Surgical Treatment of the Stomach and Duodenum During the Last Twenty Five Years.
- Dr. Willis C. Campbell, Memphis, Tenn.: Ununited Fractures of the Humerus.
- Dr. Thomas M. Joyce, Portland, Ore.: Acute Appendicitis.

Dr. James Tate Mason, Seattle, President-Elect, American Medical Association, was the honor guest at the annual dinner at the Rainer Club. Dr. Mason spoke on "The Future of Medicine" and Dr. Alfred W. Adson, Rochester, Minn., on "The Present Status of Surgery of the Sympathetic Nervous System."

### WEST VIRGINIA

**Society News**—A symposium on mastoiditis was presented at a meeting of the Cabell County Medical Society, Huntington, December 12, by Drs. Festus O. Marple, Joseph Hallock Moore, Alexander R. MacKenzie, Wesley C. Thomas and William F. Beckner.—Dr. James H. Mendel, Philadelphia, addressed the Ohio County Medical Society, Wheeling, December 13, on diagnosis of diseases of the ear.

**Conference of County Secretaries**—The annual conference of secretaries of county medical societies was held at the headquarters of the West Virginia State Medical Association in Charleston, January 7, with the following program

Dr. Charles G. Morgan, Moundsville, president of the state association  
The Work of the Coming Year  
Dr. Andrew E. Amick, Charleston, Infant and Maternal Welfare  
Dr. William W. Strange, Huntington, Getting Rid of Quacks  
Dr. William M. Scheppe, Wheeling, County Programs and Activities  
Dr. Rome H. Walker, Charleston, The Corporate Practice of Medicine  
Dr. Ward Wylie, Mullens, Medical Legislation and the Role of the County Secretary in Securing Its Enactment.

The secretaries were guests of the Kanawha Medical Society at a dinner dance at the Daniel Boone Hotel in the evening.

## GENERAL

**Northwest Regional Conference**—The Northwest Regional Conference will be held in Chicago, February 16 at the Palmer House under the presidency of Dr. Oliver J. Fay, Des Moines, Iowa. The program will be in the form of a symposium in which the following speakers will take part:

Thomas V. McDavitt of the Bureau of Legal Medicine, American Medical Association, Chicago, Social Security Act and Its Relation to the Medical Profession  
Dr. Harold H. Camp, Monmouth, Ill., Reciprocal Relations Between State Medical Societies  
Dr. Forrest L. Loveland, Topeka, Kan., Standardization of the Activities of the Committees on Medical Economics of the Midwest and Northwest  
Dr. Fred Moore, Des Moines, Interprofessional Relations in the Country

**Outbreaks of Meningitis**—Seven cases of meningitis with three deaths have occurred at the state farm at Bridgewater, Mass. it was reported January 15.—A ten day quarantine was imposed in Harrison County, Mo., January 1, because of a case in Daviess County, which is adjacent.—Twenty-five cases of illness including meningitis demobilized a strike of longshoremen in Galveston, Texas, in December, according to newspaper reports. Four deaths from the disease were reported from central Texas with strict quarantine in Milam County.—The U. S. Public Health Service reported, January 17, that the incidence for the country as a whole has been the highest since 1930. For the four weeks ended December 28, 436 cases were reported, the highest incidence being in the South Central states. Oklahoma reported 54, Texas 36, Kentucky 16 and Tennessee 12.

**Five State Graduate Clinic**—The District of Columbia Dental Society will act as host to the Five State Post Graduate Clinic at the Wardman Park Hotel, Washington, March 8-11. A feature of the meeting will be tours of the modern crime laboratory in the new Department of Justice building. These tours which must be registered for in advance will be open only to visiting dentists and physicians. A symposium on the biologic concept of dental diseases will be presented March 9 with the following speakers:

Dr. Edward C. Rosenow, Rochester, Minn., Bacteriologic Aspect of Dental Diseases  
David S. Gardner, D.D.S., Rochester, Minn., Oral Diagnosis from the Clinical Viewpoint  
Dr. William P. Murphy, Boston, Internists' Viewpoint of Dental Diseases in Relation to General Health

Other speakers on the program will include:

Dr. Clarence O. Simpson, St. Louis, Radiographic Phase and Demonstration of Radiodontic Technique  
George M. Anderson, D.D.S., Baltimore, Periodontic Phase of Dental Disease with Regard to Orthodontia  
L. L. Furnas, D.D.S., Cleveland, Prosthetic Restoration of Partial Denture Cases  
Vernon J. Lehr, D.D.S., and Edmund I. Bollars, D.D.S., Washington, D. C., Operative Restoration Including Crown and Bridge Work and Open Bite Case

Clinics will make up the program Wednesday. Physicians and dentists of Maryland, Virginia, West Virginia, Delaware and North Carolina are invited to the clinic as well as all members of the American Medical Association who wish to attend. Additional information may be obtained from E. T. Lane, D.D.S., 1029 Vermont Avenue, N.W., chairman of the publicity committee.

**Medical Bills in Congress**—*Changes in Status*. S. I. Res. 169 has been reported to the House proposing to authorize Drs. Hugh S. Cumming, surgeon general, John D. Long, medical director, Bolivar I. Lloyd, medical director, and Clifford R. Key, surgeon, all of the United States Public Health Service, to accept and wear certain decorations bestowed on them by the governments of Ecuador, Chile, Peru and Cuba. H. R. 1044 has passed the House providing supplemental appropriations for the fiscal year ending June 30, 1934. The bill makes available the following appropriations among others for carrying out the provisions of the Social Security Act for enabling each state to extend and improve services for promoting the health of mothers and children \$1,500,000 to be

administered by the Children's Bureau to enable each state to extend and improve services for crippled children, \$1,187,000 to be administered by the Children's Bureau to enable the United States through the Children's Bureau to cooperate with state public welfare agencies in establishing extending and strengthening public welfare services for the care of homeless or neglected children, \$625,000 to assist states, counties, health districts and other political subdivisions of the states in establishing and maintaining adequate public health services including the training of personnel for state and local health work, \$3,333,000, to be administered by the United States Public Health Service to enable the United States Public Health Service to conduct investigations with respect to diseases and sanitation, \$375,000.

## CANADA

**Western Division of Connaught Laboratories Established**—A division of the Connaught Laboratories of the University of Toronto has been established at the University of British Columbia in cooperation with the department of bacteriology and preventive medicine of the university and the provincial board of health. The arrangement is on a tentative basis for one year. Dr. Claude E. Dolman, Vancouver, has been appointed associate professor and acting head of the department of bacteriology and preventive medicine at the University of British Columbia and director of the Provincial Board of Health Laboratories of British Columbia, continuing on the staff of Connaught Laboratories as a research member. Dr. Randolph J. Gibbons of the laboratories staff will be associated with Dr. Dolman at the Western Division.

## Government Services

### Public Health Service Needs Physicians

The U. S. Public Health Service will consider applications to fill a number of existing vacancies and also those which will occur about July 1 for second year medical interns. Physicians, not more than 30 years of age who have graduated from a class A medical college and who have completed, or will shortly complete, one year's internship in an approved hospital are eligible. Applicants should be interested in the service as a career. Appointments effective on and after July 1 to vacancies at marine hospitals and the U. S. Narcotic Farm, Lexington, Ky., will carry a gross compensation of \$1,800 a year from which a deduction of \$690 a year will be made if quarters subsistence and laundry are furnished. Appointments to federal penal and correctional institutions will carry a gross compensation of \$1,620 a year, from which an annual deduction of \$240 will be made by the department of justice if quarters subsistence and laundry are furnished. Complete details may be obtained from the Surgeon General, U. S. Public Health Service, Washington, D. C.

### Surgeon General Cumming Retires

After sixteen consecutive years of outstanding service as surgeon general of the U. S. Public Health Service, Dr. Hugh S. Cumming retired January 31 from that position. Surgeon General Cumming was born in Virginia in 1869 and graduated at the University of Virginia Department of Medicine in 1893 and at the University College of Medicine, Richmond, in 1894. In the same year he was appointed assistant surgeon in the U. S. Public Health Service, he was appointed passed assistant surgeon in 1899 and surgeon in 1911. During the World War, 1917-1919, Dr. Cumming was public health expert with the U. S. Navy and in 1920 was appointed surgeon general of the U. S. Public Health Service by President Wilson. He was president of the American Public Health Association in 1931. He is a member of numerous scientific organizations and has received many honorary degrees and decorations in this country and abroad. Among other things, Surgeon General Cumming's administration of the public health service is credited with completion of the quarantine system, inauguration of pre-immigration examinations at American consulates, establishment of a national leprosanarium and national narcotic farms, the construction of eight marine hospitals, and with fostering scientific research. He was also active in promoting international sanitation treaties and was an organizer of the Office international d'hygiene publique representing it on the League of Nations committee. Recently he was appointed by the league a member of an executive committee of ten.

## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Dec 28, 1935

#### The Annual Congress of Radiology

The ninth annual congress arranged by the British Institute of Radiology was held in London. Dr G. W. C. Kaye, physicist, of the National Physical Laboratory discussed modern equipment. He commended the work of Allibone and his collaborators, who had constructed automatically evacuated x-ray tubes and valves which were self protected, shock proof and operated by press buttons. The exciting voltages, at present of the order of from 200 to 300 kilovolts were being pushed up much higher. Voltages up to 600 kilovolts or more were to be used in St. Bartholomew's Hospital.

#### RADIATION THERAPY

In radiation therapy, certain principles were emerging. In the treatment of cancer x-rays, radium or a combination of these were used according to circumstances. In certain superficial cancers, such as rodent ulcer, almost any radiation would heal, whether low voltage x-rays or the beta or gamma rays of radium. Other types of cancer, such as squamous epithelioma of the skin and lip, yielded to a few milligrams of heavily screened radium. But the major problem of malignant disease was the treatment of glandular metastases. X-rays of high output approaching gamma rays in quality and large quantities of radium at a distance from the skin had their advocates. At the Cancer Hospital of London and at the Westminster Hospital 1 Gm units had been used since 1929, and larger units were now contemplated. The Radium Research Board was now working with 5 Gm units.

#### CALCIFICATIONS

Dr G. Harrison Orton (radiologist) described calcification changes. The majority of such calcifications took place in degenerating tissues or in tissues of which the vitality had been impaired. Every part of an organism that was dead or dying tended to become infiltrated with calcium salts. In fractures decalcification occurred as a result of the hyperemia caused by the injury. With the limb immobilized in splints this hyperemia subsided, but in many cases decalcification continued for the normal blood supply of an immobilized limb was a relative hyperemia when the limb was functionless. That was why it was important in the treatment of fractures to arrange immobilization so that function was interfered with as little as possible. Though decalcification delayed the union of fractures it did not prevent it. The chief cause of nonunion was incomplete immobilization. Hence radiologists were familiar with cases of nonunion when two bones of a limb were fractured at the same level. Other examples were the neck of the femur and the scaphoid of the wrist. When immobilization was incomplete the connective tissue developing between was broken down and in addition traumatic hyperemia was induced which led to further decalcification. When the hyperemia subsided there was no continuous connective tissue to be calcified and sclerosis of the ends of the bones took place with resulting nonunion. He thought that the treatment of fractures left much to be desired.

#### BONE GRAFTING

Dr Orton could find no evidence that transplanted bone lived. Indeed there was considerable evidence to show that it died. Roentgen examination some months after transplantation of a fragment of bone into another showed the transplant denser than the surrounding bone, which meant that it was avascular. It might remain so and be tolerated as a prosthesis or it might

be eliminated as a sequestrum, or it might become intimately adherent to its bed and completely absorbed by a process of erosion, thus setting free calcium, which brought about the formation of new bone. One of the chief uses of bone transplantation was to provide a local store of calcium. Thus a bone transplant said to have taken was one that had become vascularized and decalcified. If it became merely a prosthesis that was tolerated, it was a moot point whether certain unsorbable material would not be better. The important point for the radiologist to remember was that a successful bone transplant was one that eventually became rarefied.

#### Dr Griffith Evans, Pioneer of Veterinary Pathology

Dr Griffith Evans, army inspecting veterinary surgeon, has died at the age of 100 at Bangor, North Wales. His career was remarkable. Born at Ty Mawyr, Towyn, in 1835, he was descended from one of the five Royal tribes of Wales. He entered the Royal Veterinary College, London, where he qualified M.R.C.V.S. in 1855. In 1860 he was appointed to the army veterinary department. When the American Civil War broke out he was attached to the Royal Artillery at Montreal. He was anxious to visit the field hospitals of the Northern army and, in spite of obstacles put in his way, obtained an interview with President Lincoln, who gave him permission on condition that he helped the wounded and made himself medically useful to the troops. He became on intimate terms with Generals Grant, Meade and Thomas. At McGill University he graduated M.D., C.M. in 1865 and formed a lifelong friendship with Osler. He presented a graduation thesis on tuberculosis, in which he described its infectious nature and advocated open air treatment twenty years before Koch discovered the bacillus. He returned to England in 1870. In 1880 he was serving in India and was asked by the government to investigate surra, a fatal disease of horses, camels, mules and cattle. He discovered that it was due to a trypanosome in the blood. This was the first time that a protozoan was recognized as a cause of disease. It was named *Trypanosoma Evansi*. Thus he laid the foundation of protozoan pathology. Osler described him as "the man who first saw a pathogenic trypanosome." Not until the next decade was another discovered, *Trypanosoma Brucei*, by Sir David Bruce in Zululand. This proved to be conveyed by the tsetse fly and to cause disease in animals. In 1882 Evans made another important discovery—that a filaria, named in 1882 *Filaria sanguinis Evansi*, occurred in camel's blood. It was only late in life (first by France) that he received adequate recognition and that honors were showered on him. Like Ross and other great scientists in government service he was not adequately appreciated and not well treated. One of his daughters expressed the opinion that if he had been allowed to prosecute his researches his name would have been as well known as that of Pasteur.

#### The Deficiencies of Modern Diets

The Health Organization of the League of Nations has issued a report on the physiologic bases of nutrition by the technical commission appointed by the health committee. The commission was representative of the most eminent dietitians. Its work was conducted in the light of the proposal of Mr. Bruce (Australian delegate) who urged the necessity of marrying agriculture and public health in the interests of the latter. The commission declares that deficiencies in important nutrients are a common feature of modern diets and that these deficiencies occur in the protective foods (foods rich in minerals and vitamins) rather than in the energy giving foods. An adult living an ordinary life in a temperate climate and not engaged in manual work is taken as the basis for reckoning. An allowance of 2,400 calories a day is considered adequate for such a person. For muscular work the supplements are as follows.

light work up to 50 calories an hour, moderate work, up to 50-100 calories an hour, hard work up to 100 calories an hour very hard work, up to 200 calories and upward an hour. For all adults the protein intake should not fall below 1 Gm per kilogram of body weight, and it should be derived from different sources of which a part should be animal.

#### THE PROTECTIVE FOODS

The most important protective foods are given as milk and milk products, eggs and glandular tissues, then green leaf vegetables, fruit, fat fish and meat. Of energy giving foods, unmilled cereals are not rich in protective substances and the more they are refined the less their protective power. Many fats, especially when refined, have little or no protective constituents. The increasing habit of large sugar consumption is regarded with concern as it tends to lessen the amount of protective foods in the diet. The pregnant woman should be regarded as the member of the population needing the greatest protection. There is difficulty in arranging a diet for her to provide adequate calcium, phosphorus, iron and vitamins B<sub>1</sub>, B, C and D. Ordinary diets are usually inadequate in vitamin D and except in sunny seasons and sunny countries a small ration of cod liver oil should be included in the diet of the pregnant and nursing mother and the growing child. Fish liver oils are the richest sources of vitamin A and also important sources of iodine. An extended use of the potato to replace some of the sugar and highly milled cereals of the ordinary diet is recommended. Potatoes provide extra vitamin C and more readily available calcium and phosphorus than cereals. They also yield more iron and B vitamins than cereals.

#### VARIETY IN DIET

Although a simple diet may be constituted from a few protective foods so as to be satisfactory, variety in diet tends to safety. White flour is deprived of important elements and should be replaced by less highly milled cereals and potatoes. Milk should be a conspicuous element in the diet at all ages. Fresh vegetables and/or fruit should always enter into the diet.

#### PARIS

(From Our Regular Correspondent)

Dec 20 1935

#### All Diplomas to Be Revised

Owing to the great number of practitioners whose registration might have been irregular, especially during the war a general revision of every diploma was ordered by a recent decree. Every person practicing medicine or dentistry in France must submit for verification the indenture or diploma in pursuance of which he exercises his profession. The verification and authentication will be made by a commission composed of public government medical men, local authorities, university directors and a representative of the local medical society. On the other hand, the town and rural administrations as well as the tax collectors are to publish the list of every person in the medical profession in their jurisdiction. If strictly enforced the law will identify many illegitimate practitioners.

#### The Tax on the Professions

The tax on the liberal professions initiated long ago is in fact a permit to open an office. Last year the tax was divided into two parts: first a tax equal for every one, second a graduated tax figured according to the value of the professional premises from a tenth for the high rents to a twentieth for the low ones. This change made the tax more equitable since formerly a doctor with a large family and consequently a high rent paid much more than the bachelor for the same professional activity. So the tax has been reduced to the premises used in the business exclusive of dwelling. Put this return to strict equity was harmful for the French budget

in which it created a deficit. So there came a decree October 31, according to which the tax will be increased by a general raising of what the money experts call "centimes additionnels," i. e., a certain number of centimes added to every franc of the taxes. On the other hand the owners of large clinics and the like, who are supposed to make considerable money, are taxed extra. The tax offers three scales: 5 per cent if the professional premises do not exceed a rent of 4,000 francs in Paris, 3,000 in the smaller cities and 2,400 in the country; 10 per cent if the rent ranges between 4,000 and 6,000 francs in Paris, 3,000 and 4,500 in other cities and 2,400 and 3,600 elsewhere; 20 per cent if the rent is more than 6,000 francs in Paris and 4,500 or 3,600 in the other places. Suppose a doctor in Paris, with a rent of 21,000 francs including professional premises estimated to have a rental of 7,000 francs: his patent will be, for a year, 6,660 francs.

#### Private Hospitals in Distress

Dr. Massart, in the *Concours medical* sounds an alarm with regard to the *Maisons de sante privées*. Their situation especially those owned by physicians is precarious, and there is danger of their rapid failure. They were initiated fifty years ago, when the progress of surgery necessitated well equipped and organized hospitals, in the days when almost every old public hospital refused to conform to the new standards of asepsis, laboratory work, and so on. A little later, especially in provincial towns, the hospital administrations realized that their interest was to organize, in the public nonpaying hospital, some wards or rooms reserved for the paying patients. The local surgeons collaborated with the city administrators and every one was satisfied: the cities, which made an appreciable profit, the doctors, who were free from business worries, and the patients, who found a valuable organization at their service. But this system was admittedly bad for the practitioners on the whole because it created for the appointed surgeons a privilege and left all the other medical men without any way to organize proper accommodations for their patients. It is unjust too, and unlawful, for city administrations to compete with free hospital foundations with the money of taxpayers as private wards in city hospitals benefited as a rule from the established conditions, organization and special revenues of the old hospitals. Sooner or later it will be necessary to abandon this system and to institute in both private and community hospitals the sound principle of free choice. Meanwhile numerous medical foundations were established with the avowed purpose of attracting the intermediate clientele: the social insurance patients, or groups of employees or wage earners who can afford to pay a moderate return for medical or surgical care. Those hospitals are, generally speaking, supported by private contributions or by wealthy corporations. So the small private hospitals wedged between the public hospitals in which the rates are moderate and the large institutions founded and supported by private charities, are not able to balance their budgets.

#### Research on the Prevention of Syphilis

Dr. Sonnenberg of the Saint Alexandre Hospital Lodz, Poland has communicated to the Academie de medecine the results of nine years' research on the prevention of syphilis by intramuscular injections of an oily suspension of bismuth. He applied his method to the prostitutes of Lodz. He gives an intramuscular injection every two weeks. Of 145 women so treated in 1933-1934 nine or 6.1 per cent were nevertheless infected with syphilis. Analysis of these cases shows that the number of failures bears a relation to the small amount of bismuth absorbed either because insufficient time had elapsed or because the treatment had been stopped or was given irregularly. Some women followed this method of prevention for nine years and one can say that without it they would have been infected. There was no case of intolerance.



## BERLIN

(From Our Regular Correspondent)

Dec. 9, 1935

## Congress of German Gynecologic Society

In October the German gynecologists held their fiftieth convention at Munich. This convention was distinguished from others by the fact that several of the reports were given by representatives of fields other than gynecology. The first paper concerned the problem of sterility. The gynecologist Albrecht of Munich spoke on periodic fertility and sterility. An important prerequisite for the periodicity of fertility is an exact knowledge of the duration of viability of the spermatozoon and of the ovum. The impregnating capacity of the sperm may be retained at the temperature of the abdominal cavity at most for thirty hours but for a substantially longer time at the cooler temperature of the epididymis. Impregnating capacity and motility never correspond, the impregnating capacity is extinguished much earlier than the motility. Experiments on animals are here to be compared with great caution. For the ovum, despite occasional exceptions, the capacity for conception may be set at only a few hours. Doubtless there are in women fluctuations of fertility dependent largely on the duration (generally about fourteen days) of the corpus luteum. This period of duration is not exactly the same in each individual case, the connections of the corpus luteum with other endocrine glands, particularly the hypophysis, cannot be overlooked. The time most favorable to conception is from the ninth to the sixteenth days of the cycle, but it is equally certain that conceptions are possible during the so-called sterile period of the menstrual cycle. The cause of this is that in almost all women occasional phase-shifting occurs, which is conditioned through early or late ovulation. As the cycle seldom runs its course with absolute regularity, the positive calculation of the sterile periods is not possible.

In connection with this subject, Richter of Leipzig spoke on biologic sterility. According to the experimentation of stock breeders it is clearly maintained that inbreeding does not diminish fertility. As a cause of sterility (in animals) a whole series of biologic facts is to be considered, such as, for example, overnourishment, which however can be remedied by restricting the diet. More important, because more frequent, is sterility from undernourishment. The correct combination of foods is also of importance, as is an ample content of calcium, of phosphorus and of vitamin. As shown by experiments performed at Moscow, a greater fertility in animals can be obtained by artificial impregnation than by natural coitus. Nor is the offspring of artificial impregnation in any way inferior.

According to studies by Spiethoof of Leipzig on sterility due to venereal diseases, gonorrhea is more dangerous by far than syphilis. In Germany about 8,000 men and 12,000 women are each year rendered sterile by gonorrhea. Syphilis probably influences fertility indirectly, by its influence on premature birth. Since it may be accepted that from 7 to 10 per cent of stillbirths are attributable to syphilis, the incidence of sterility because of this disease may be estimated at approximately 2,000 to 3,000 annually.

Haselhorst-Rostock emphasizes that salpingography is an important indication for diagnosis. When occlusion of the fallopian tubes is present as happens in a large percentage of cases of sterility the success of an operative neostomy depends on different factors. Particularly the tubes should be penetrable to the end. This is most favorable when it is only a question of adhesions to be dissolved. In other cases in which stenosis of the cervix is present dilation with curettage is recommended. As regards treatment by means of organ extracts, no uniform interpretation has thus far been obtained according to the opinions of various clinicians. Grouping all the methods together one can anticipate success in about 16 per

cent of the cases. Prophylaxis is important, particularly for the prevention of inflammations after gonorrhea or after abortions.

According to data gathered from the "sterility consultation hour" at the Women's Clinic of the University of Berlin, as reported by K. F. Schultze, a bilateral tube occlusion was encountered in 40 per cent of 800 cases of sterile women. Complete cure was obtained in about 20 per cent of these cases.

The second topic was the question of the liver and gestation. Von Bergmann as an internist brought out that, as statistics show, gallstones are more frequently found in parous women. Like the endocrine functions the gallbladder experiences in pregnancy a shifting of its neural regulation. It may be concluded that a stone diathesis is present because stones in the choledochus of rats may originate, for example, in vitamin A deficiency or extirpation of the gallbladder. One must keep free from the mechanical interpretation of the etiology of calculi. Transitions from physiologic to pathologic function are rapid. A liver deficient in glycogen is more vulnerable. A fattening of the liver cells renders the liver more capable of resistance. Functional tests are valuable for the research clinic but not for practice. Experimentally, vitamin A can be prophylactically given. A diet deficient in fat but rich in carbohydrate is the most suitable.

The gynecologic report by Heynemann of Hamburg called especial attention to the fact that, when excessive vomiting occurs, hepatic changes of a toxic nature are to be taken for granted. He recommends an increased amount of carbohydrate in such cases. On the other hand it is still debatable whether or not at the same time a certain amount of insulin is suitable. Finally, Schmieden of Frankfurt-on-Main pointed out in a surgical report that gallstones are from four to five times more frequent in women than in men. Attacks occur most frequently during pregnancy or generally first begin at that time. Most surgeons, as Schmieden expresses it, ardently desire an early operation for cholelithiasis. The presence of gallstones forms no indication of an interruption of pregnancy. At best one may operate several months after or during the first five months of pregnancy. In one third of the cases, severe cholecystitis leads to miscarriage. Puerperal fever must also be thought of in connection with this disease.

## Another So-Called Cause of Cancer

In the autumn of 1934, in several articles appearing in the *Medizinische Welt* a causative agent of cancer was described which a botanist and bacteriologist, W. von Brehmer, a member of the state biologic institute in Berlin-Dahlem, claimed to have discovered and which was named by him *Siphonospora polymorpha*. From the first, Prof. Victor Schilling has been particularly vociferous in his objections both to the method and to the results of this discovery. The communications of Dr. von Brehmer became the more obnoxious as they were disseminated widely by means of numerous interviews in the daily press. For a year this publicity caused a great sensation but, as so often happens in the case of stories of a discovery of the cause of cancer, the excitement at length quieted down. Recently, however, an official statement has appeared in the *Reichs-Gesundheitsblatt* under the unusual caption of "Explanation" the more unusual as it concerns Dr. von Brehmer, the functionary of a state institution. In this publication the president of the state board of health makes known the result of an investigation that had been undertaken by an official commission before which Dr. Brehmer had been given the opportunity to present his proofs and to discuss them. This commission was pleased to conclude that although the aforementioned bacillus exists no causal relationship between the organism and the origin of cancer has been established and that therefore his proof is quite worthless and adds nothing

to a knowledge of cancer. Also the commission found that the palladium electrodes, by which, according to Dr von Brehmer, the acid content of the blood could be measured, show no definite results. Clinical investigations showed further that of a group of fifty-two patients von Brehmer diagnosed twenty-seven as cancerous and of these seventeen were as a matter of fact without any carcinoma! On the other hand two patients actually presenting carcinoma were classified as noncarcinomatous by Dr von Brehmer. He had stated further, on a basis of his examination that fourteen patients received radiation therapy, yet of these ten actually received no such treatment. The commission therefore concluded that the investigations of Councilor Dr von Brehmer contribute nothing to the knowledge of cancer.

The president of the state board of health then gives voice to the opinion that "neither the determination of cancerous conditions nor the practical treatment of cancer is possible by the methods of Mr von Brehmer accordingly such assertions as depend on them are without accuracy."

#### The Use of Breast Milk

Several years ago it was decreed throughout Germany that breast milk be kept in certain central depots. One year ago the Breast Milk Distribution Depot was established in Berlin. The work of this depot increased to such an extent that larger quarters were soon necessary. The demand for breast milk has steadily exceeded the supply. Within a month of the depot's foundation, 54 liters was given out, and during the eleventh month as much as 320 liters. The central depot was then transferred to the Kaiserin Auguste Viktoria Anti-Infant-Mortality House and Professor Bessau was placed in charge. The women whose breast milk was utilized were, of course, subjected to a thorough examination (including blood tests and tests to ascertain their freedom from tuberculosis), these women received 2.50 marks for each liter furnished. The milk after medical certification was placed in 200 Gm bottles for use among the prematurely born and undernourished infants. Private individuals paid 5 marks per liter, sick insurance society members and clinics 4.50 marks (the sick insurance societies of Berlin took on themselves 70 per cent of the cost).

#### Government Control of Lectures on Nutrition

The Reichsarbeitsgemeinschaft für Volksernährung has undertaken to exercise a certain control over the popular lectures delivered throughout the country on the subject of nutrition. It had been found that in this field conditions existed that, in the interest of a true and uniform education, needed to be remedied. Now that the chief bureau of public health of the national socialist party has provided in a preliminary way for suitable popular lectures on nutrition in the various political districts, the control over lectures on nutrition will be exercised in the main by the local headquarters of the national socialists. The purpose of such control is to prevent possible damage to health and to economic conditions. At first an attempt will be made, without the adoption of legal measures to bring about normal conditions through the issuance by the Reichsarbeitsgemeinschaft of a special certificate for lecturers on the subject of human nutrition. All persons who are planning to deliver after Oct 1, 1935 popular lectures on human nutrition must secure a certificate setting forth their professional qualifications and their personal reliability. An exception will be made in the case of authorized physicians or other authorized persons. This lecturer's certificate will be considered a sufficient guaranty that the lectures to be delivered will not be in contravention of the government's health policies or agrarian needs. The government emphasizes that this measure is designed not to restrict but to encourage education of the people on nutritional subjects through public lectures. It is hoped that persons pro-

vided with the required certificate will be utilized to the fullest extent as lecturers and that their endeavors will receive ample support from the people.

#### ITALY

(From Our Regular Correspondent)

Dec 15, 1935

#### The National Surgical Congress

The forty-second national congress of the Società Italiana di Chirurgia was recently held in Bologna, under the chairmanship of Dr Roberto Alessandri of the University of Rome. The first official topic was cysts and tumors of the lung by Drs Pietro Marogna of Sassari and Gherardo Forni of Venice. Dr Marogna discussed the geographic distribution of echinococci infestation in Italy, the frequency of its pulmonary localization, which is almost 35 per cent, and the diagnosis. He reviewed the Lamas-Mondino-Prat operation in two stages which gives the greatest number of recoveries. The method of Posadas is not to be recommended. The Antonucci and Valdomi operations must be observed longer before their value is confirmed. Artificial pneumothorax and phrenicotomy are indicated in cases of abundant pulmonary suppuration and before more serious operations are resorted to. The medical treatments that have been used thus far are useless.

Dr Forni classifies pulmonary tumors as benign (mature) and malignant (immature). Benign tumors of the lung are rare. Among these, teratomas and dermoid cysts have clinical importance. There is a tendency, based on recent histologic studies, to admit that various tumors which were previously diagnosed as sarcomas have an epithelial origin. In the last twenty years the frequency of pulmonary carcinoma has greatly increased. The etiology and pathogenesis of pulmonary carcinoma are not clarified, although it is admitted that various irritative factors are concerned in its development. No congenital predisposition or exogenous factors exist that predispose to pulmonary carcinoma, which is more frequent in men than in women in a proportion of 4 to 1. The age at which the tumor is most likely to develop is between 50 and 60 years. Pulmonary carcinomas may be differentiated into carcinoma of the hilus, infiltrating carcinoma of the lobule and carcinoma almost surrounding the lung. As the epithelium that lines the respiratory mucosa from the main bronchi to the alveoli is of the same type, one may accept the hypothesis that all carcinomas of the lung are bronchiogenic, originating in either the bronchial or the alveolar epithelium. The disease does not produce pathognomonic symptoms. The local symptoms are those usually observed in other subacute or chronic diseases of the lung, but the pain is more intense. The diagnosis is made by the results of the clinical roentgen, bronchoscopic and sometimes thorascopic examinations. The biopsy performed by aspirating particles of tumor by lung puncture through the thoracic wall, gives results of slight confirmatory value. The biopsy of the infiltrated glands facilitates the diagnosis, but by the time the glands are infiltrated the tumor has passed the limits in which operation gives favorable results. In the United States the examination of the pleural fluid by Mandelbaum's method is recommended as a diagnostic procedure. The clinical importance of an early diagnosis in pulmonary carcinoma is based on the fact that the tumor may be removed surgically. Lobectomy is indicated in operating on tumors that are circumscribed in a peripheral parenchymal zone and that originate in the smaller bronchial branches. Tumors originating in the main bronchi or its branches can be removed only by a total pneumonectomy. It is advisable to give the patient preoperative care. An artificial pneumothorax from one to three weeks before the operation is useful because it produces gradual collapse of the lung, reduces the mobility of the mediastinum and diminishes the danger of operative shock.

The anesthesia is important. Cyclopropane and nitrous oxide anesthesia, by the intratracheal route, is much in use. The number of operations for pulmonary tumors, which up to a few years ago totaled 138, has been increased during the last few years by seventeen operations for benign tumors, twenty-four for sarcomas and ninety-four for carcinomas. In eighty-four cases atypical operations were performed (resections, pneumonectomies and cauterizations), which were insufficient and were followed by a high rate of mortality. Lobectomy, in one or more operative stages, was performed in thirty-six cases. As a preliminary operation to one-stage lobectomy, either artificial pneumothorax or phrenico-exeresis was performed. The postoperative results from lobectomy were sixteen deaths, twelve cases with either recidivation or metastases, and eight recoveries. In eighteen cases a total pneumonectomy was performed, with nine deaths, four cases with recidivation and five recoveries. As a whole the progress of surgical exeresis can be considered slow but sure. The combined radium-roentgen-surgical treatments must be observed for a longer time for the evaluation of their results.

During the discussion, Dr. Putzu of Cagliari said that the Casoni reaction is positive in from 60 to 65 per cent of the cases of echinococcal cysts of the lung but is not specific, since a group reaction may produce false results. The results of Ghedini-Venbergs test are more certain than those of the Casoni reaction. Dr. Fabris maintained that he has seen more than a hundred cases of primary tumors of the lung since 1928. Dr. Alessandri observed that tumors of the lung have increased lately but stated that it cannot be decided whether the increase is actual or is due to the improved diagnosis or to the more frequent performance of necropsies.

#### THROMBOSIS

The second official topic of the congress was thrombosis and embolism. Dr. Ragnotti differentiates three forms of thrombosis: those originating in the wound of a vessel, septic thrombosis and spontaneous (autoclithonous) thrombosis. The evolution of spontaneous thrombosis, which brings in association the danger of the production of embolism, is not clear. The primary cause of thrombus formation is the agglutination of the platelets (white thrombus). Coagulation of the blood (mixed and red thrombi) takes place secondarily. An early diagnosis of thrombosis is necessary for the prevention of embolism. The pulse and the temperature and especially the local symptoms of pain and neurosympathetic disturbances are of value in the diagnosis. Absolute rest and the application of cataplasms form the basis of the treatment.

Dr. Valdoui spoke on postoperative embolism of the pulmonary artery. Organic heart disease is frequently seen in cases of postoperative embolism of the pulmonary artery, according to some authors, in as many as 90 per cent of the cases. In nearly 80 per cent of the cases embolism develops after operations performed either in the abdomen or in the pelvis. The greatest incidence is in patients over 50 years of age. Massive embolism produces sudden death in 40 per cent of the cases; in the remaining cases there is the possibility for the performance of an operation. During the last ten years nine cases of massive embolism ending in recovery after the performance of a Trendelenburg embolectomy have been reported. The speaker discussed also embolism in the limbs on which 450 operations have been reported up to the present. The arteries of the legs are the most frequently involved and the condition is rapidly followed by secondary gangrene. Embolectomy is not dangerous in this condition though it should be done early. According to statistics reviewed by the speaker functional restoration takes place in 76 per cent of the cases in which the operation is performed within six hours of the production of the embolism.

#### PERICARDITIS

The third official topic was chronic mediastinal pericarditis. Dr. Luisada of Naples was the official speaker for the Società di Medicina Interna.

Dr. Torraca, the official speaker for the Società Italiana di Chirurgia, spoke on the indications for the performance of an operation in adhesive pericarditis. The operation to be performed may be any of the following: cardiolysis (Brauer's operation), phrenico-exeresis (Sauerbruch's technique), endopericardial pericardiolysis (Delorme's operation) and pericardiectomy (Rehn, Schmieden and Sauerbruch's operations for decortication of the heart). Improvement in the technique of pericardiectomy and the better training of the surgeons in this operation will make its results far better than they are at present.

#### NETHERLANDS

(From Our Regular Correspondent)

Nov. 28, 1935

#### Association for Protection Against Aerial Warfare

Several civil authorities, in collaboration with Netherlands military technicians, taking the initiative, have founded the Association for Protection Against Aerial Warfare, which has the following objectives:

1. Instruction of the population in the developments and the importance of the aerial menace and the means of protection against aerial attacks.

2. Education of the whole population with regard to the measures of protection taken and to be taken by the authorities and the support that may and should be accorded this organization.

3. The publication in all the homes of the chief items of information concerning the measures of protection to be taken by each civilian before, during and after aerial attacks.

4. Active progress in the preparation for individual protection and, if possible, the employment of competent personnel to guide the population, and the procuring of efficient equipment to be placed at the disposal of this organization.

It is probable that all the similar existing organizations will unite their forces which will facilitate immediate contact with the population.

#### The Crusade Against Rats in Amsterdam

An intensive campaign against rats is about to begin in Amsterdam. This crusade will consist in a campaign of extermination to be repeated regularly at fixed intervals. The rats will be killed, if possible in their lurking places. The poison will be spread about. Preparations of bacteria will not be employed. Spring is the most favorable time for beginning the extermination. A second campaign will take place at the end of summer or the beginning of autumn. An intensive publicity campaign in order to assure the collaboration of the population in an effective fight against rats will be launched twice each year. The radio and printed leaflets will be the principal means of promoting publicity. The expense of this campaign against rats is estimated, for the first year, at 30,000 florins (\$20,000).

#### The Echinococcus and Homeless Dogs

Drs. Tenhaeff and S. Ferwerda have published comparative statistics concerning the echinococcus in domestic animals in Mecklenburg and in Friesland and the menace of homeless dogs as a source of contagion. These dogs eat the waste parts of butchered animals and often contaminate the cattle and the hogs on a farm. A careful control of butchering on the farms is needed. One third of the hogs in Friesland were examined in 1932 and in 1 per cent of them the echinococcus was found. In hogs coming from other provinces vesicular cysts were frequently found. About the time the law

requiring inspection of butchering places went into effect, the cases of echinococcus in cattle were from one and one-half to two times more frequent in Mecklenburg than in Friesland. In man, on the other hand the disease was twice as common in Friesland as in Mecklenburg. The dogs of the province of Friesland are more frequently infested with *Taenia echinococcus* than are those of Mecklenburg. In closing the authors state that homeless dogs and not dogs on leash are the source of contagion for man and animals. The cases of echinococcal infestation have diminished materially in Friesland since the butchering places on the farms have been subjected to inspection. The situation is less favorable in Mecklenburg, where inspection is not obligatory. Tenhaeff and Ferwerda think that inspection of domiciliary butchering places should be required in all the provinces of the Netherlands.

## BELGIUM

(From Our Regular Correspondent)

Nov. 28, 1935

### International Congress for the Protection of Childhood

The Congrès international de la protection de l'enfance was held in Brussels in connection with the eleventh session of the Association internationale pour la protection de l'enfance.

#### THE NEED OF PEDIATRICS IN THE TRAINING OF PHYSICIANS

The first topic on the program. The present status and the need of pediatrics in the professional training of physicians was discussed by E. Lesne and Mlle. G. Dreyfus-See of Paris who emphasized that instruction in pediatrics is of paramount importance. They explained the essential criteria and desiderata of pediatricians and presented the following resolution which was adopted:

1. The course in pediatrics obligatory for all, should be further developed.

2. The course should be followed by a theoretical and practical examination in puericulture and pediatrics.

3. Admission to positions requiring the services of physicians skilled in hygienic organization and the care of children should be reserved to physicians holding a university certificate in puericulture and pediatrics based on studies pursued following special courses extending over one or two years.

#### THE PRENATAL EXAMINATION

In presenting the second topic 'The Prenatal Examination, Eugenic and Therapeutic Preventive Measures,' G. Schreiber of Paris presented a classification of these measures which he divides as follows:

Marriages that should be absolutely disapproved. The following diseases should be regarded as absolutely prohibitive of marriage: cancer, grave tuberculosis, chronic alcoholism, aneurysms, aortitis, hemophilia, neurosyphilis, tabes, dementia praecox, multiple sclerosis, severe epilepsy, incurable mental diseases, homosexuality.

Marriages that should be disapproved temporarily. Herein are included marriages that would unite couples in spite of the fact that one or both partners are affected with a contagious disease harmful to at least one party to the contract and to the offspring, although the danger may be removed after institution of systematic and prolonged treatment. Under this head may be placed active tuberculosis which entails only a minimal danger for the marriage partners but a grave danger for the offspring and venereal disease during the period of contagion.

Marriages that may be approved provided certain precautions are taken. This includes marriage in which one of the proposed partners is affected with tuberculosis that is apparently inactive, gonorrhea of long standing, or noncontagious syphilis.

Marriages that may be approved without reservations. This category includes marriages in which there is no menace on the horizon

that might compromise the health of either marriage partner or that of future offspring (descendants of cancerous persons, young women who are amenorrheic but without genital malformation, healthy descendants of parents affected with certain familial diseases).

#### PROPHYLAXIS OF TUBERCULOSIS

P. F. Armand-Delille thinks it would be well to apply the BCG method more generally and to administer the vaccine systematically by the oral route to all the new-born during the first ten days after birth. If the child is born in a contaminated environment, absolute isolation is needed and should be maintained until the appearance of a positive skin reaction, the proof of the impregnation of the organism by the premunizing BCG vaccine. He advises repeating the vaccinations (preferably by the subcutaneous route) at sufficiently close intervals.

The premunizing potency of the BCG vaccine and its duration have never been exactly ascertained. Moreover, even in children who have been correctly vaccinated, true tuberculous manifestations have been observed, usually attenuated but sometimes grave. One should therefore exercise caution when it is a question of allowing vaccinated children to remain in constant contact with a carrier of tubercle bacilli.

### The Red Cross in the Belgian Congo

Mr. Jean Ghilain, official representative of the Red Cross Society of the Belgian Congo, in his address at the inauguration of the new center of social medicine at Leopoldville sketched the work accomplished by his branch of the Red Cross. He referred to the creation of local publicity and educational centers, dispensaries and consultation centers for young mothers. He described the initiative that the society had taken in the fight against leprosy in the Népoko region and against venereal disease along the equator and in Katanga. The local committee of Leopoldville acquired in 1928 the idea of creating a center of social medicine in the native quarter of Kikushasa. The beginnings of this center were difficult. In 1933, however, recoveries were effected in 627 cases of syphilis and in 117 cases of gonorrhea in women.

A gift from Queen Elizabeth in 1929 was the basis for the construction of this center in Leopoldville. The center today comprises four pavilions, containing a polyclinic, an antivenereal dispensary, an antituberculosis dispensary and a consultation department for young mothers. This happy arrangement makes it possible for the personnel of each pavilion to preserve its independence and to work constantly in collaboration with the personnel of the other pavilions.

### New Edition of the Physicians' Guide

A new edition of the professional guide for Belgian physicians has just appeared. The book begins with information on the organization of professional defense and then takes up the composition of the nineteen special commissions charged with the study of various professional questions. Chapters follow on: Administrative social medicine (tariff schedules, contracts, various regulations); medical service for indigents; occupational accidents; Antituberculosis crusade; Child hygiene; Belgian legislation on public hygiene and practice of the medical profession; Information of a fiscal nature: income tax, law pertaining to stamp taxes and the like; Medical certificates: model forms for an ordinary medical certificate and for special certificates (occupational accidents, interment of the corpse, attestation of death and the like); Medical fees; resume of legislation; documentary evidence in connection with contestation of fee. In urgence in relation to the medical profession: group insurance reserved for members of the Belgian Medical Federation; professional civil responsibility insurance; individual insurance; insurance for household workers; Federal library; Organization of hygiene in Belgium.

## Marriages

ALLAN SIMPSON CHRISMAN Asst Surg, Lieut (j g), U S Navy, Charlotte, N C, to Miss Eleanore Krekeler of Montclair, N J, Dec 21, 1935

PAUL DOUGLAS CAMP JR Richmond Va, to Miss Nellie Cornelia Staves in Schenectady, N Y, Dec 7, 1935

EDCAR JACKSON EVANS JR, Denville, N J, to Miss Isabell Hoffman of Allentown, Pa, Dec 28 1935

GYPSIE J DOBYNS Phoenix, Ariz, to Miss Virginia Jane Herron of Salinas, Calif, in January

FRANK H CANTLIN Philadelphia, to Miss Ann Louise Kearney of Shamokin, Nov 30, 1935

J WITHINGTON EATON Goffstown, N H, to Miss Eudelle Parks of Londonderry, Dec 1, 1935

JAMES T EMERT, New York, to Miss Barbara Hatch of Sharon, Conn, Dec 21, 1935

WALTER E KOTANCHIK Shamokin, Pa, to Miss Helen Smith of Watontown, recently

## Deaths

Thomas Clark Chalmers, Forest Hills N Y, Bellevue Hospital Medical College New York, 1897 member of the House of Delegates of the American Medical Association, 1919-1930, member of the Medical Society of the State of New York, past president of the Medical Society of Queens County, and chairman of the board of trustees, 1924-1931, past president of the Medical Association of the Greater City of New York, and the Society of Medical Jurisprudence, fellow of the American College of Physicians, pediatricist to the Cornell University Dispensary, New York, 1903-1911; attending pediatricist to the Jamaica (N Y) Hospital, 1913-1916, attending physician and pediatricist to the Flushing Hospital, 1915-1923, since 1915 attending physician to the Queensboro Hospital, and president of the medical board, 1915-1921, member of the executive committee and representative of Queens County, advisory council, City of New York Department of Hospitals, served in various capacities on the New York National Guard, and as major surgeon during the Spanish-American War, aged 67, died suddenly, Nov 16, 1935, in Exeter, N H, of heart disease

Ward Brinton Philadelphia, Jefferson Medical College of Philadelphia 1894, formerly instructor in medicine University of Pennsylvania School of Medicine, and clinical professor of medicine, Woman's Medical College of Pennsylvania, first chief of the division of tuberculosis, department of public health, formerly secretary of the Pennsylvania Tuberculosis Society, veteran of the Spanish-American and World wars, for many years on the staff of the Philadelphia General Hospital at various times on the staffs of the Phipps Institute, White Haven (Pa.) Sanitarium, Protestant Episcopal Home for Consumptives Babies' Hospital and the Eagleville (Pa.) Sanatorium aged 62 died Dec 29, 1935, in the Pennsylvania Hospital.

Willis F Westmoreland, Atlanta Ga, Atlanta Medical College 1885, fourth vice president of the American Medical Association in 1896 member and past president of the Medical Association of Georgia, and the Southern Surgical Association fellow of the American College of Surgeons, emeritus professor of surgery and clinical surgery Emory University School of Medicine past president of the state board of health, surgeon to St Joseph's Infirmary and consulting surgeon to the Grady Hospital, aged 71, was found dead, Dec. 4, 1935

Stanley Sinclair Smith Pittsburgh, Jefferson Medical College of Philadelphia, 1896, professor of ophthalmology University of Pittsburgh School of Medicine member of the American Academy of Ophthalmology and Oto-Laryngology fellow of the American College of Surgeons served during the World War on the staff of the Eye and Ear Hospital, Pittsburgh Columbia Hospital Wilkesburg and the Carnegie Institute of Technology aged 61, died Dec 2 1935 of coronary thrombosis and myocarditis

Silber Charles Peacock Chicago Rush Medical College Chicago 1925 served during the World War, assistant attending physician at the Childrens Memorial Hospital and acting director of the Otho S A Sprague Memorial Institute Labora-

tory, head of the department of pediatrics, Henrotin Hospital on the staff of the Ravenswood Hospital, aged 41, was found in his car murdered, January 3, after he had responded to a false telephone call to attend a sick child.

Thomas Henry Snowwhite, Braddock Pa, University of Pittsburgh School of Medicine, 1913, member of the Medical Society of the State of Pennsylvania demonstrator of surgical anatomy at his alma mater, fellow of the American College of Surgeons, served during the World War, president of the board of education, gynecologist to the Braddock General Hospital, aged 44, died, Nov 22, 1935, of malignant hypertension

Henry Wald Bettmann Cincinnati, Medical College of Ohio, Cincinnati, 1890, professor of medicine University of Cincinnati College of Medicine, member and past president of the American Gastro-Enterological Association and fellow of the American College of Physicians, past president of the Cincinnati Academy of Medicine, on the staff of the Jewish Hospital, aged 67, died, Dec 5, 1935, of coronary thrombosis

Samuel Eugene Harmon Columbia, S C University of Tennessee Medical Department, Nashville, 1899, president of the South Carolina Medical Association, member of the Associated Anesthetists of the United States and Canada, fellow of the American College of Surgeons visiting surgeon to the Columbia and Baptist hospitals, aged 64, died suddenly, Dec 26, 1935, of coronary thrombosis

Henry Kent Hooker Clinton, Ill, Chicago Homeopathic Medical College, 1903, served during the World War, for twelve years member of the high school board of education and city physician, connected with the Edmonson Clinic, aged 60 on the staff of the John Warner Hospital, where he died, Nov 21, 1935, following an operation for appendicitis

Henry G Woutat Grand Forks N D, University of Minnesota College of Homeopathic Medicine and Surgery, Minneapolis, 1897, member of the Radiological Society of North America, fellow of the American College of Surgeons, on the staff of the Grand Forks Deaconess Hospital, aged 62 died Nov 27, 1935, of coronary disease.

Edward Dewitt Wagoner, Burrows, Ind, Medical College of Indiana, Indianapolis, 1903, member of the Indiana State Medical Association, past president of the Carroll County Medical Society, formerly county coroner, aged 61, died Nov 23, 1935, in the Methodist Hospital, Indianapolis, of septicemia coronary thrombosis

Charles Edward Nickson Independence, Mo, Medical College of Kansas City, 1904, member of the Radiological Society of North America, on the staff of the Independence Sanitarium and Hospital, aged 62, died, Nov 6 1935, in Kansas City, of heart disease and pulmonary embolism

Lester Bogue Rhamy Wabash, Ind., Indiana University School of Medicine, Indianapolis, 1928, formerly secretary and vice president of the Wabash County Medical Society, on the staff of the Wabash County Hospital, aged 37, died, Nov 19 1935, in the Pokegama (Minn.) Hospital, of tuberculosis

William Thorndike Milwaukee, Harvard University Medical School, Boston, 1896, assistant medical director of the Northwestern Mutual Life Insurance Company, aged 65, died Nov 23, 1935, in the Columbia Hospital, of chronic lymphatic leukemia, and gastro-intestinal hemorrhage

Harry Ralph Wormley Rockford, Ill, Rush Medical College, Chicago, 1906, member of the American Academy of Ophthalmology and Oto-Laryngology, on the staff of the Rockford Hospital, aged 56 died suddenly, Nov 20, 1935, of heart disease, while on a hunting trip in Iowa.

George David Lockie, Springfield, Ill National Medical University, Chicago, 1898, member of the Illinois State Medical Society, veteran of the Spanish-American and World wars aged 65, on the staff of St Johns Hospital, where he died Dec. 25, 1935, of multiple sclerosis

James Bernard O'Connor Lowell Mass, College of Physicians and Surgeons, Baltimore, 1892, formerly member of the local school committee, aged 67, on the staff of St John's Hospital where he died, Dec 22, 1935, of enlarged prostate and diverticulitis

Abram A Hershman New Haven, Conn, Yale University School of Medicine, New Haven, 1908 member of the New England Obstetrical and Gynecological Society, on the staff of the Grace Hospital, aged 49, died, Nov 11, 1935 of brain tumor

Louis Edward Brinker, Cincinnati, University and Bellevue Hospital Medical College, New York, 1900, member of the Ohio State Medical Association, on the staff of the Good Samaritan Hospital aged 59 died, Dec 23 1935, of coronary occlusion.



**Gustavus Dedman Lillard** ♂ Lawrenceburg, Ky, University of Louisville Medical Department, 1893, past president of the Anderson County Medical Society, formerly member of the city council, aged 70, died, Nov 24, 1935, of coronary embolism

**Robert Wilcox**, Pascoag, R I, Long Island College Hospital, Brooklyn, 1878, medical examiner in Burrville and North Smithfield, formerly member of the state legislature, aged 81, died, Nov 15, 1935, of chronic nephritis, myocarditis and arteriosclerosis

**O A Oredson**, Duluth, Minn, Minneapolis College of Physicians and Surgeons, medical department of Hamline University 1903, aged 63, died, Nov 25, 1935, in St. Mary's Hospital, of myocardial insufficiency and pulmonary embolism

**Frank Albert Birnbaum**, Marathon Wis, Marquette University School of Medicine, Milwaukee, 1927, member of the State Medical Society of Wisconsin, aged 34, died Nov 27, 1935, in St. Mary's Hospital, Wausau, of lobar pneumonia

**Lucien Eldred Larche**, Bastrop, La, Memphis (Tenn) Hospital Medical College, 1909, member of the Louisiana State Medical Society, member of the city council, aged 51, died in December 1935, at a hospital in Monroe, of pneumonia

**Leslie Woodruff Snow** ♂ Salt Lake City, Jefferson Medical College of Philadelphia, 1886, on the staff of the Dr W H Groves Latter-Day Saints Hospital, aged 73, died, Nov 28, 1935, of carcinoma of the prostate and diabetes mellitus

**Ira David Bowser**, Reynoldsville, Pa, Western Pennsylvania Medical College, Pittsburgh, 1906, member of the Medical Society of the State of Pennsylvania, aged 52, died, Nov 25, 1935, of pneumonia following a gunshot wound

**Joseph Edward Hurley**, Rochester, N Y, University of Buffalo School of Medicine 1909, member of the Medical Society of the State of New York, aged 56, died, Nov 21, 1935, of cirrhosis of the liver and gastric hemorrhage

**John Arnold Board**, Altavista, Va, Medical College of Virginia, Richmond, 1913, member of the Medical Society of Virginia, aged 44, was found dead, Dec. 18, 1935, of an accidental gunshot wound received while hunting

**John Hagerty Bishop**, Carversville, Pa, Georgia Eclectic Medical College, Atlanta, 1881, also a dentist Civil War veteran, aged 86, died, Dec. 25, 1935, in the Doylestown (Pa) Hospital, of injuries received in a fall

**Nathaniel Z Dunkelberger**, Kutztown, Pa, Medico-Chirurgical College of Philadelphia, 1890, member of the Medical Society of the State of Pennsylvania, aged 71, died, Nov 6, 1935, of cerebral hemorrhage

**Rupert Connor Herrick** ♂ Gilmore City, Iowa, State University of Iowa College of Medicine Iowa City 1908, past president of the Pocahontas County Medical Society, aged 50, died, Nov 22, 1935, of heart disease

**Louis E Blair**, Albany, N Y Albany Medical College, 1881, member of the Medical Society of the State of New York, aged 78, died suddenly, Dec. 8, 1935, of arteriosclerotic heart disease and coronary occlusion

**Joseph Z Heston**, West Jefferson, Ohio, Columbus Medical College, 1889, formerly member of the board of education, aged 78, died Nov 26, 1935, in the Mount Carmel Hospital, Columbus, of cerebral hemorrhage

**F Nolan Thorpe**, Boylston, Ind, Central College of Physicians and Surgeons, Indianapolis, 1905, member of the Indiana State Medical Association, aged 57, died, Nov 25, 1935, of mitral insufficiency and nephritis

**Solomon Milton Linville**, Lexington, Ky, Kentucky University Medical Department Louisville, 1905, aged 55, died Nov 18, 1935, in the Veterans Administration Facility, of coronary thrombosis

**Charles Shepherd Webb**, Bowling Green, Va, University of the City of New York Medical Department 1875, member of the Medical Society of Virginia, formerly mayor, aged 89, died, Nov 28, 1935

**Frederick A Roberts**, Pittsfield Mass, College of Physicians and Surgeons, Baltimore 1897, member of the Massachusetts Medical Society, aged 72, died Nov 30, 1935, of angina pectoris

**William T Pride**, Madison Ala, Tulane University of Louisiana Medical Department New Orleans 1895, member of the Medical Association of the State of Alabama, aged 70, died Nov 19, 1935

**George Gilbert Barnett**, Ishpeming Mich, Rush Medical College, Chicago 1884, member of the Michigan State Medical Society, formerly mayor and city health officer, aged 82, died Dec 5, 1935

**Charles Raymond Dwyer**, Broomall Pa, Jefferson Medical College of Philadelphia, 1926, aged 35, died, Nov 16, 1935, in the Delaware County Hospital, Drexel Hill, of Hodgkin's disease

**Joseph Tanno**, Cleveland, Regia Università di Napoli, Facoltà di Medicina e Chirurgia, Italy, 1902, aged 57, died, Nov 29, 1935, of hypertension, arteriosclerosis and coronary thrombosis

**Charles S Crockett**, Lincoln, Ark (licensed in Arkansas in 1903), member of the Arkansas Medical Society, aged 58, died Dec 7, 1935, in a hospital at Siloam Springs, of myocarditis

**Sara J Lloyd**, Detroit, Michigan College of Medicine and Surgery, Detroit 1891, aged 85, died, Dec 2, 1935 in the Deaconess Hospital, of hypostatic pneumonia and fractured femur

**Frederick Falk** ♂ Seattle, University and Bellevue Hospital Medical College, New York, 1899, served during the World War, aged 62, died, Nov 28, 1935, of coronary thrombosis

**Cyrus Burford Weller**, Austin Texas, University of Texas School of Medicine, Galveston, 1908, aged 54, died, Nov 26, 1935, in the Brackenridge Hospital, of chronic myocarditis

**Orwin E Howe**, Washington D C (licensed in the District of Columbia in 1894), aged 82, died Nov 6, 1935 in the Washington Sanitarium and Hospital, Takoma Park, Md

**Edward Samuel Hull**, Milton Junction Wis, Bennett College of Eclectic Medicine and Surgery, Chicago, 1891, aged 82, died, Dec. 4, of carcinoma of the genito-urinary tract

**Marion W Jinks**, Suwanee, Ga, Georgia College of Eclectic Medicine and Surgery, Atlanta, 1910, aged 66, died, Dec 8, 1935, of acute nephritis due to dental sepsis

**Matthew Thomas Cumiskey**, Brooklyn, University and Bellevue Hospital Medical College, New York, 1899, aged 71, died, Dec 12, 1935, of carcinoma of the liver

**Carroll Monroe Lovell**, Dickson, Tenn, Vanderbilt University School of Medicine, Nashville, 1876, formerly mayor and postmaster, aged 85, died, Nov 17, 1935

**James Marmaduke Boddy**, Minneapolis, Albany (N Y) Medical College, New York, 1905, aged 70, died, Nov 17, 1935, of coronary thrombosis and chronic nephritis

**William John D Lawrence**, Gadsden, Ala, Vanderbilt University School of Medicine, Nashville, 1886, aged 74, died, Nov 5, 1935, in Birmingham, of pneumonia

**Charles A Ingraham**, Cambridge, N Y, Albany (N Y) Medical College, 1878, aged 83, died, Nov 24, 1935, of chronic myocarditis and coronary thrombosis

**Willis Leroy Tucker**, Hinsdale, Mass, College of Physicians and Surgeons of Chicago, 1893, served during the World War, aged 63, died Nov 7, 1935

**Le Baron Botsford Wilmot**, Winnipeg, Manit, Canada, McGill University Faculty of Medicine, Montreal, Que, 1901, aged 61, died Oct 17, 1935

**Richard G Callihan** ♂ Luray, Mo, Keokuk (Ia) Medical College, 1891, president of the Clark County Medical Society, aged 66, died, Nov 28, 1935

**Leon Harvey Goodale** ♂ Nashua, Iowa, Hahnemann Medical College and Hospital, Chicago, 1887, aged 72, died, Dec 5, 1935, of cerebral hemorrhage

**Ernest Elmer Wishard**, Chicago Medical College of Indiana, Indianapolis 1900, aged 60, died, Nov 27, 1935, of acute coronary artery occlusion

**Robert Nicholas Daley**, Boston Harvard University Medical School, Boston, 1894, aged 65, died Nov 16, 1935, of chronic myocarditis

**Archibald McCallum**, Gulfport Miss, Kentucky School of Medicine Louisville, 1879, aged 80, died, Nov 6, 1935, of chronic myocarditis

**Lewis Bernhard Parks**, Cadiz Ohio, University of Pittsburgh School of Medicine, 1910, aged 49, died Nov 23, 1935, of heart disease

**Luther F Worley**, Mazon Ill, Missouri Medical College, St Louis 1887, aged 77, died Nov 22, 1935, of chronic myocarditis

**William McKinley Carter**, Bell Calif, University of Illinois College of Medicine, Chicago 1920, aged 40, died Nov 2, 1935

**Alfred P Hanchett**, Council Bluffs, Iowa, Chicago Homeopathic Medical College, 1878, aged 83, died Dec 8, 1935, of uremia

## Correspondence

### THE OWNERSHIP OF X-RAY FILMS

To the Editor—In an editorial in THE JOURNAL Oct 12, 1935, page 1193, on the decision of the Supreme Court of Michigan that an x-ray film made of a patient by, or for, his physician in the course of the study of the case, and necessarily a part of the record, is the property of the doctor by whom it was made, although paid for by the patient unless he has entered into an agreement waiving ownership, you comment on the "successful issue" of the case. You close with the words "the decision leaves undetermined the questions whether a patient personally or through physicians, or others employed by him has a right to inspect a roentgenographic negative while it remains in the possession of the physician who made it or to require on payment of a reasonable cost, that prints of the negative be furnished to him." You end your editorial with the additional comment that the decision "is a distinct advance in the settlement of a troublesome and important question."

There are several points of view in this most 'important question' that need to be decided by the courts and the Michigan decision serves only as a basis for discussion. The court finally must elucidate this matter! Why not now? Whose interests are paramount the collector of data on which, in part at least a diagnosis is made or confirmed or the patient whose pathologic condition is bound to change for better or worse and who cannot perhaps carry around with him the physician who made and holds the pictures, whose possession of them is legalized by this decision? If it were necessary to decide the question at once and finally I should say that since the profit in roentgenology is so great it seems to me that the taker of the original film could supply a 4 by 6 photograph of the film, or of such of the films as established the diagnosis, for passing on to the patient. In chest cases such a course is so just and necessary that one is led to wonder why it is not generally applicable. A patient with lung tuberculosis may seek the advantage of a change in climate after a lung compression. The doctor in the new location would like to know the progress of the lung condition, and this can be well understood only by a study of such films as have been taken to record the changes due to various means of therapy. To meet this situation a sanatorium which I was instrumental in founding as an eleemosynary institution began its career twenty-five years ago by requiring a satisfactory x-ray plate of the chest of every patient that entered and the signing of an agreement that these plates and subsequent ones made at the institution at a cost of \$2 each to the patient became the permanent property of the institution. This was due to a suit in southern California about that time for \$50,000 against a sanatorium because the patient claimed that a subsequent plate showed she had never had pulmonary tuberculosis. It is obvious that the evidence of the sanatorium record in that case would have been strengthened greatly by the possession of the first plate had one been taken. We all know that even a cavity may heal so that no trace of the tuberculous process may show. Then too the evidences of latent or obsolete tuberculosis may be of great importance in a patient subsequently developing silicosis. There are so many reasons why a copy (not a print) of the original roentgenogram is of more value to the patient than to the doctor who makes his diagnosis often on the evidence only of the roentgenogram that every first class sanatorium for lung cases sends along its x-ray plates with patients returning to distant places either as a loan or with the understanding that they are given to the patient for the help of the physician under whose care the patient comes in event of subsequent trouble. I do not wish to be considered a chest specialist exclusively for my interest

in lung disease for twenty-five years has been to help to make lung tuberculosis a treatable disease instead of a boarding house proposition, as it was too often twenty-five years ago. In all this time, thousands of x-ray plates have passed from physicians and sanatoriums to us and from us to them, and never has this privilege of inspection or change in ownership been refused. Where a return of the films is asked we photograph them and return them at once. In that way both records are preserved. The records of two institutions to which I am consultant include these films of photographs of original plates attached to the histories so that on rounds the whole roentgenographic record of the case can be reviewed at once, and if it is in the patient's interest to have the original films on leaving they are passed on.

There are a number of problems which experience has taught in the amassing of evidence that makes clear the necessity of the ownership of the original film resting in the doctor who assumes the responsibility of a therapeutic procedure that is based on the roentgen examination and which subsequent roentgenograms would not make clear. A dentist may remove a tooth at the root of which an abscess exists. The film is his justification and should be his property. A fracture may heal or not heal, and in either case there may arise questions in which he may have to defend himself, and the roentgenogram is again of fundamental importance. That this situation may be abused goes without saying and the editorial raises properly the question of the right of others to inspect the original roentgenograms or have copies of them. And here there is need for the skilled roentgenologist, for suits are brought on the basis of such poor films that no interpretation of pathologic conditions should be made of them.

There are far too many roentgenologists, and the poorer two thirds ought to be prevented from claiming either the remuneration or the authority of the skilled ones, and this applies particularly to roentgen therapy. Most orthopedic and chest specialists, dentists and fracture specialists insist on their own reading of plates. After all the best roentgenologists must be good clinicians and pathologists and many that I know never lose a chance to follow a patient to surgery or autopsy in order to check up when they can, on their own observations. A good many advances in roentgenology have been due to team work between clinicians and roentgenologists. One has only to hark back to the subject of annular shadows misinterpreted by half a dozen roentgenologists of national standing and clarified by Dr M. P. Burnham roentgenologist of the St. Francis Hospital, and myself.

Simpson H. L., Heise F. H. and Brown Lawrason. Pulmonary and Pleural Annular Radiographic Shadows. *Am Rev Tuberc* 2: 664 (Jan.) 1919.

Amherston J. B. Jr. Roentgenographic Pleural Annular Shadows in Pulmonary Tuberculosis. *Am Rev Tuberc* 5: 723 (Nov.) 1921. 6: 480 (Aug.) 1923.

Honeij J. A. Cavity Formation and Annular Pleural Shadows in Pulmonary Tuberculosis. *Arch Int Med* 25: 63 (Jan.) 1920. Roentgenographic Pleural Annular Shadows in Tuberculosis. *Am Rev Tuberc* 6: 477 (Aug.) 1922.

Barlow, Nathan and Thompson J. C. Small Pneumothorax in Tuberculosis. *Am Rev Tuberc* 5: 611 (Oct.) 1921.

Burnham M. P. and Brown P. K. Criticism of Recent Interpretations of Annular Shadows in Lung Roentgenograms. *Am Rev Tuberc* 6: 469 (Aug.) 1922.

Brown P. K. Annular Shadows: Are They Cavities or Spontaneous Pneumothoraces? *Am J Roentgenol* 10: 445 (June) 1923.

In industrial hospitals particularly such as the Southern Pacific General Hospital where all expense is borne by an insurance rate there is no question of the ownership of films, and yet when we discharge a patient sent in from an out of town point by any of the 450 doctors of the staff we send an interpretation of roentgenograms taken and full data concerning all laboratory work and all specialists' opinions. The films will be sent if asked for. Obviously the doctor who is to carry on should have the benefit of all facts brought out by investigations of all kinds.

There is still another angle the value of mass evidence in certain conditions. There is no better illustration than the

figures from the Mayo Clinic on hypertrophic osteo arthritis of the spine in some 3,000 cases over the age of 50 years in which the roentgenograms taken in the course of kidney investigations of men and women with no complaints of the spine showed that 67 per cent of the men and 40 per cent of the women had demonstrable hypertrophic changes in the vertebrae of the lumbar spine. This important study could not have been made had the Mayo Clinic not retained plates made in the course of investigation of disease conditions.

Still another problem is presented in the question of how long films should be kept by a physician or an institution. Obviously the advantage of what may be gained by mass evidence dictates the indefinite preservation of films but unless they are carefully stored they may mildew or undergo changes that lessen their value. They have the same value that specimens have when removed at operation. A vast majority need not be kept for any purpose for more than a short period (purposely not defined). Many specimens are worthy of places in a museum and should be kept permanently. Every roentgenologist has a library of unusual cases and preserves with additional care films showing important evidence in controversial subjects.

It would seem therefore that it is the duty of some one in authority to have the courts settle all the problems connected with x-ray films of pathologic conditions for the benefit of the patient and the protection of the doctor.

PHILIP KING BROWN, M.D., San Francisco

Supervisor of Medical Service,  
Southern Pacific Hospital

### THE VOICE OF EXPERIENCE ABOUT STAIRS IN HEART DISEASE

*To the Editor*—Walking downstairs is good for heart disease. Some one told me this morning about a physician who warned a man suffering from heart disease that if he walked down stairs and came up again he would drop dead. The man went back to bed with the idea of staying there! From time immemorial walking upstairs has been supposed to shorten the lives of people with heart disease. Strangely enough few have appreciated that the reverse is true and that going downstairs will prolong the lives of people with heart trouble.

I had under my care the late Dr. L. Duncan Bulkley who lived to a great age (83) so that he and his father covered the entire span of skin diseases as a specialty, his father having been the first skin specialist in America. Dr. Bulkley was a really great physician, a keen observer and an original thinker. In the latter years of his life he had an office in the same office building with me. I was on the ground floor and he was high up in the building. I noticed that I often met Dr. Bulkley at the bottom of the stairs instead of coming out of the elevator. He told me that he considered walking downstairs the best exercise that he knew of and that he made it a practice to walk down instead of taking the elevator. I don't know how early in life he started the treatment but he certainly lived to a great age.

Walking downstairs is an exercise closely allied to the famous resistance exercises invented by August Schott who was a pioneer physician of the great heart treatment center in Germany, Bad Nauheim. In some process of reasoning or accidental observation Schott discovered that resistance movements improved the heart of impaired hearts. In this form of exercise the subject is instructed to make a movement and then the movement is gently resisted by the operator. In this manner the muscles are increased as to their tonicity. It has been my belief that this tonicity of the voluntary muscle in one way or other brings about an increase in tonicity in the heart muscle.

At any rate, resistance exercises are under the control of the operator and can be used in the earlier stages of convalescence after a very serious heart attack.

Walking downstairs as an exercise for elderly persons has the additional advantage that it is an exercise also in balancing the body, a faculty that is apt to become impaired in older persons. In Europe one sees in buildings the sign 'Please use the stairs in going down,' but in this country stairs are used hardly at all where there are elevators, and the stairs are usually unattractive in appearance, particularly in office buildings.

Incidentally I would remark that it has been brought to my notice that fairly young persons of the present day are often breathless after going upstairs, which was certainly not true of the same group before the invention of elevators.

LOUIS F. BISHOP, M.D., New York.

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

### DIMENSIONS OF CHILD AT BIRTH

*To the Editor*—At the suggestion of Dr. Ella Oppenheimer of the U. S. Department of Labor I am writing to you for information with regard to the average dimensions of the head, hips and shoulders of a child at birth. I would appreciate any information with regard to these dimensions.

F. JONSTON, Newton, Mass.

ANSWER.—A recent study by Drs. Harry Bakwin and Ruth Morris Bakwin on the size of infants at birth was published in December 1934 in the *American Journal of Diseases of Children* and in *Human Biology*. The authors made many careful measurements of 1,653 new born infants. They tabulate the average measurement of the same dimension of the infant together with the standard deviation and the coefficient of variation. The average of their measurements of the circumference of the head in a group of 395 males was 344.90 mm. while in a group of 417 females it was 338.52 mm. In the same two groups the cephalic length (from the most prominent part of the occiput to the glabella in the midsagittal plane) was 117.21 mm. and 114.62 mm., respectively. The cephalic breadth (biparietal diameter) was 92.78 mm. and 91.87 mm., respectively. The average bitemporal diameter in these two groups was 74.22 mm. and 71.87 mm., respectively. The biacromial diameter (straight distance between the most lateral points of the acromial eminences taken from behind with the child seated and arms close to the thorax) was 112.48 mm. and 111.30 mm., respectively. All the foregoing figures apply to the first born. The authors give a separate table of measurements for the 'later born.' They found that the external dimensions of infants at birth are larger in males than in females, and in later born than in first-born infants. They observed that new born infants from a poverty-stricken environment were smaller in all dimensions than new born infants from a more favorable environment. The nationality of the parents seemed to have no influence on the dimensions. The season of the year had no influence on the weight and height. A seasonal variation, however, was noted in the various dimensions, these being smaller during the spring and summer and larger during the autumn and winter.

### VACCINATION AGAINST SMALLPOX

*To the Editor*—Can you tell me how long after vaccination for small pox it is before signs of immunity can be detected in the patient? Is there a definite rationale for vaccination after exposure to small pox in the unvaccinated? Kindly omit name.

M.D., Nebraska

ANSWER.—Practical experience is probably the best guide as to protective immunity following successful vaccination for small pox in the unvaccinated individual. Five days after an active vaccination reaches its peak (usually about the seventh day after vaccination with potent small pox vaccine virus) the individual is protected.

If the unvaccinated individual is exposed to small pox and is vaccinated within four days after exposure and a prompt take results he will in all probability escape small pox. A successful take resulting from vaccination made from the fifth

Dr. Robert Bell Library

U. M. L. Medical College

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to the seventh day after exposure will not prevent smallpox but will usually make the case mild, the lesions of smallpox will be small with a slight inflammation area about each, and the disease will run a short atypical course. Vaccination made after the seventh day following exposure will take but will not influence the severity or course of the disease.

It is wise to make a second vaccination on the person exposed less than four days as the first vaccination may fail to take. The second vaccination should be at least  $1\frac{1}{2}$  inches from the site of the first vaccination and made two days after the first one.

#### DIFFERENTIAL DIAGNOSIS OF CONDITION AFFECTING LUNG

*To the Editor*—About four months ago a man aged 56 had an attack of influenza. He had been sick for three or four days with coughing a cold fever and a general malaise. He was well nourished and weighed about 160 pounds (72 Kg). There were rales over the lower lobes of both lungs. The personal and family histories were negative. The patient was advised to rest in bed for several days which he declined to do. Two weeks later the fever had subsided but otherwise the condition was about the same. When he first came to the office the blood pressure registered 120 systolic, 70 diastolic the pulse rate was full and almost bounding 72. The patient remained ambulatory for about six weeks the condition making some improvement one week and losing it the next. Today his blood pressure is 98 systolic 60 diastolic the pulse rate about 90 with dulness and rales over both lungs and hemoglobin about 65 per cent. Examinations of the sputum and the skin test are negative for tuberculosis. The patient was given digitalis and tonics the first month. Since that time he has been given a 5 cc ampule of iron cacodylate every third day and also halibut liver oil with viosterol. For the past week he has been on the theocalcin with iodides. He feels fairly well except for a general weakness and I notice the condition of air hunger characterized by constant effort to get a deep breath. There has been no cough for the past six or eight weeks. The patient has been in bed for the past five weeks. M D Alabama

*ANSWER*—It is difficult to determine from the information given whether the condition is primarily respiratory or circulatory. The term influenza is generally used loosely and it is doubtful whether the influenza bacillus alone often produces long continued pathologic changes in the lung. Bronchopneumonia complicating influenza may result in empyema, lung abscess or the activation of tuberculosis. A negative skin test for tuberculosis is not convincing. A Mantoux or Pirquet test is positive in such a high percentage of cases at this age that a negative test merely raises a suspicion of the material or the technique used. Likewise a negative sputum examination does not rule out the possibility of tuberculosis. An encapsulated, interlobar empyema is often difficult to make out and will be found only on careful roentgen examination.

The bilateral character of the lung conditions would suggest a circulatory basis for the disability. Influenza, however, is seldom primarily responsible for myocardial failure. If this patient has myocardial failure it is most likely that the myocardial damage existed prior to the influenzal attack and that the attack was merely another straw on the camel's back. The fall in blood pressure and the rapid heart rate at rest are indicative of myocardial failure, although both are consistent with infection.

The possibility of coronary thrombosis must not be overlooked. The fever, cough and general weakness of the mitral attack would fit into this picture perfectly, and severe pain is not invariably a part of a coronary accident. The subsequent course in this case would fit such a diagnosis very well.

The question states that the hemoglobin is about 65 per cent at present but makes no mention of the hemoglobin percentage at the onset. The occurrence of a rapidly developing anemia would be significant.

To determine the cause of the condition, the following study is suggested:

Repeated chest examinations to determine whether the dullness is due to pleural fluid, lung consolidation or lung congestion.

A chest roentgenogram if possible, to assist in the determination.

A search for additional signs of circulatory failure such as a swollen liver, edema of the subcutaneous tissues or albuminuria.

A careful determination of the heart size and contour together with any additional facts regarding the preexisting state of the circulation that might be of value.

A careful examination of the urine, including simple kidney function tests. Renal failure or diabetes is not without the range of possibilities.

Lastly, but not likely, Addison's disease should be considered.

#### BLOOD COUNT AND BLOOD CHEMISTRY OF THE DOG

*To the Editor*—Will you kindly give me information or references on (1) the normal blood count in dogs and (2) the normal blood chemistry of the dog.

ISAAC APPERMAN, M.D., New York.

*ANSWER*—1. The normal blood count (erythrocyte) in the dog is 6,248,666 on the basis of some nine counts by Abderhalden and others (*Arch f d ges Physiol* 216 362, 1927). The limits of variation were from 6,120,000 to 6,520,000. Marloff (*Arch f d ges Physiol* 175 355 1919) reports a count of 6,650,000 (according to the Bürker method). These figures accord with the results of the various American investigators.

*Leukocyte Count in the Dog on the Basis of the Investigations of Kuhl, Fritsch, Welsch and Werner (Man in Comparison)*

|        | Leuko-<br>cytes<br>1 000 per<br>Cu. Mm. | Kinds of Leukocytes in per Cent |                  |                |                |                  |
|--------|---|---------------------------------|------------------|----------------|----------------|------------------|
|        |   | Neutro-<br>phils                | Eosino-<br>phils | Baso-<br>phils | Mono-<br>cytes | Lympho-<br>cytes |
| Man    | 5.50                                    | 67                              | 3                | <1             | 7              | 23               |
| Dog    | 12.60                                   | 57                              | 10               | <1             | 8              | 24               |
| Rabbit | 8.91                                    | 31                              | 2                | <2             | 1              | 63               |
| Rat    | 6.14                                    | 17                              | 2                | <1             | 7              | 74               |

2. The analytic values (blood chemistry) of dogs blood are given in the following table.

#### Analytic Values of Dog's Blood

|                            | In Plasma<br>Mg per 100 Cc | In Whole Blood<br>Mg per 100 Cc          |
|----------------------------|----------------------------|--|
| Nonprotein nitrogen (as N) | 22-40                      | 35-39                                    |
| Urea (as N)                | 15-18                      | 17-20                                    |
| Ammonia (as N)             | —                          | <0.3                                     |
| Ammonia nitrogen (as N)    | —                          | 3.11 depending on the state of nutrition |
| Uric acid                  | —                          | 0.2-2.0 depending on the method          |
| Creatinine                 | —                          | 0.5-2.7                                  |
| Creatinine                 | —                          | 1.5-1.7                                  |
| Chlorine                   | 875-404                    | 291-334                                  |
| Phosphate                  | 8.5-4.0                    | —  |
| Sodium oxide               | —                          | 365-385                                  |
| Potassium oxide            | —                          | 25.5-28.0                                |
| Calcium                    | 7.10-3                     | —  |
| Magnesium                  | —                          | 5.2-5.4 (?)                              |
| Cholesterol                | —                          | 90-130                                   |
| Dextrose (fermentable)     | —                          | 60-100                                   |

The following additional data were obtained by L. Eichelberger.

#### Analyses of Blood of Normal Dogs \*

| Dog | Age  | Carbon Dioxide | Chloride mM. per Kg. of Serum | Sodium, mM. per Kg. of Serum | Water Gm. per Gm. | Total Base mEq. per Kg. of Serum | Potassium mEq. per Kg. of Serum | Nonprotein Nitrogen Gm. per Liter | Total Proteins Gm. per Liter | Weight of 1 Cc. of Serum |
|-----|------|----------------|-------------------------------|------------------------------|-------------------|----------------------------------|---------------------------------|-----------------------------------|------------------------------|--------------------------|
| 48  | 7 40 | 24.82          | 110.0                         | 150.4                        | 0.9258            | 158                              | —                               | —                                 | —                            | 1.014                    |
| 47  | 7 43 | 24.80          | 109.6                         | 146.7                        | 0.9252            | 152                              | —                               | —                                 | —                            | 1.014                    |
| 49  | 7 38 | 25.03          | 108.0                         | 142.3                        | 0.9281            | 148                              | —                               | —                                 | —                            | 1.014                    |
| 43  | 7 41 | 23.80          | 109.6                         | 139.1                        | 0.9174            | 154                              | —                               | —                                 | —                            | 1.013                    |
| 50  | 7 43 | 24.77          | 108.0                         | 142.5                        | 0.9270            | 151                              | —                               | —                                 | —                            | 1.013                    |
| 51  | 7 42 | 23.20          | 108.0                         | 140.0                        | 0.9326            | 140                              | —                               | 0.22                              | 51.4                         | 1.010                    |
| 52  | 7 28 | 25.05          | 109.6                         | 146.5                        | 0.9196            | 153                              | —                               | 0.28                              | 62.7                         | 1.015                    |
| 53  | 7 52 | 23.22          | 107.0                         | 141.0                        | 0.9294            | 151                              | —                               | 0.27                              | 51.7                         | 1.013                    |
| 54  | 7 53 | 24.28          | 107.6                         | 139.2                        | 0.9142            | 147                              | —                               | 0.27                              | 62.9                         | 1.015                    |
| 55  | 7 30 | 20.96          | 110.4                         | 145.7                        | 0.9190            | 166                              | —                               | 0.42                              | 57.6                         | 1.015                    |
| 56  | 7 40 | 24.30          | 106.3                         | 143.0                        | 0.9166            | 154                              | —                               | 0.40                              | 61.7                         | 1.015                    |
| 57  | 7 37 | 21.55          | 106.5                         | 138.0                        | 0.9220            | 152                              | 3.72                            | 0.31                              | 54.5                         | 1.015                    |
| 58  | 7 40 | 20.28          | 106.0                         | 143.0                        | 0.9160            | 153                              | 3.73                            | 0.31                              | 63.9                         | 1.015                    |
| 59  | 7 44 | 20.54          | 112.5                         | 143.3                        | 0.9098            | 155                              | —                               | 0.31                              | 64.7                         | 1.012                    |
| 60  | 7 30 | 20.35          | 109.2                         | 133.6                        | 0.9284            | 141                              | 3.34                            | 0.30                              | 60.0                         | 1.014                    |
| 61  | 7 37 | 25.47          | 112.1                         | 143.1                        | 0.9338            | 151                              | 3.28                            | 0.25                              | 49.2                         | 1.011                    |
| 62  | 7 43 | 23.23          | 111.1                         | 142.0                        | 0.9290            | 153                              | 4.10                            | 0.29                              | 53.3                         | 1.013                    |
| 63  | 7 42 | 20.76          | 110.5                         | 147.0                        | 0.9217            | 157                              | 4.29                            | 0.33                              | 57.8                         | 1.016                    |
| 64  | 7 38 | 25.67          | 107.6                         | 140.0                        | 0.9197            | 151                              | 4.15                            | 0.33                              | 57.3                         | 1.011                    |
| 65  | 7 46 | 23.30          | 107.9                         | 141.8                        | 0.9163            | 152                              | 3.15                            | 0.30                              | 62.4                         | 1.016                    |

Methods for Colorimetric Hastings A B and Sendroy Julius Jr  
J Biol Chem 61 695 (Oct.) 1924  
Carbon dioxide Van Slyke D D and Neill J M J Biol Chem  
61 523 (Sept.) 1924  
Chloride Van Slyke D D J Biol Chem 58 523 (Dec.) 1921  
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Sodium Butler A M and Tibbitts Elizabeth J Biol Chem 93:  
171 (Sept.) 1931  
Total base Stadie W C and Ross Effie C J Biol Chem 63:  
735 (Oct.) 1925  
Protein Kjeldahl  
Potassium Shohl A T and Bennett Helen B J Biol Chem 73  
643 (Aug.) 1928.  
\* Under barbital anesthesia.

SEXUAL INTERCOURSE DURING GONORRHEAL  
PROSTATITIS

To the Editor—I have under my care a patient with gonorrheal prostatitis who has been receiving prostatic massage twice weekly for the past two months following the subsidence of the acute posterior urethritis. There is no urethral discharge and prostatic smear reveals a slowly diminishing number of pus cells. The first glass is clear and the second shows a moderate number of stringy shreds containing pus cells and a rare gonococcus. If the patient should take every precaution to protect his wife from infection would occasional and very moderate sexual intercourse be contraindicated? The patient has a strong erotic tendency and attempts at sublimation have been only partially successful. He resorts to masturbation once a week and has about one nocturnal emission weekly. Pelouze warns against sexual intercourse during the treatment of both chronic and acute gonorrhea. I have not noticed any harmful effects resulting from the occasional masturbation or nocturnal emission. Might not controlled sexual intercourse be just as harmless and if not what is the physiologic or pathologic basis for the prohibition? Kindly omit name.

M D New York.

ANSWER.—Sexual intercourse and excitement are contraindicated during a gonococcal infection. There is also some danger of infecting the partner even though strict precautions are observed. The use of sedatives (bromides and the like) are definitely indicated in those patients who are disturbed by sexual desires during the infection. Both sexual excitement and intercourse have a tendency to congest and traumatize the infected parts and are therefore contraindicated.

## TREATMENT OF SYPHILIS

To the Editor—Mrs. A. C. aged 26, married sixteen months reported to the clinic for treatment of syphilis Aug. 21 1934. She stated at that time that she had a miscarriage at the sixth month in January 1934 and that the doctor in charge took a blood test in March which was reported 4 plus. She received eleven injections of nearsphenamine and eleven injections of a bismuth compound from this physician before reporting to the clinic. The family history was negative and blood specimens taken on the parents' sisters and brothers were negative for syphilis. The husband admitted a gonorrheal infection before marriage which was cured and repeated blood Wassermann tests were negative. There were no other children in the family. The patient's past history revealed only the fact that in childhood she had been treated for anemia and that the doctor gave her a series of intramuscular injections. No history of primary or secondary lesions can be obtained on repeated questionings. Examination of the patient showed a subicteric tint to the skin and sclerae. She had no complaints she was very well nourished and developed, and all systems were negative on examination. Her blood pressure was 110 systolic 70 diastolic. Urinalysis was negative and the blood count was essentially negative. The blood Wassermann reaction taken on admission was reported 4 plus. The reaction on the blood of the husband was negative. A spinal fluid Wassermann reaction of the patient was negative. Treatment was begun on the evidence of her blood test together with the history of the miscarriage. Since August 1934 she has received thirty injections more of nearsphenamine 0.9 Gm each at weekly intervals and thirty six injections more of a bismuth compound at weekly intervals and between series of the arsenicals. Her treatment has been continuous to date but the blood Wassermann reaction has persistently remained 4 plus on all examinations. Throughout treatment the patient's physical condition has been very good. I should like to have your opinion on the following questions: 1. Is the diagnosis tenable in the absence of clinical evidence? 2. Is this adequate treatment for the patient in view of recent researches? 3. What can I promise the patient in the way of cure if she remains under treatment? 4. Would you advise the patient to become pregnant and bear a child while under treatment? Please omit name.

M D New York.

ANSWER.—1. The diagnosis of syphilis is justifiable when a patient has repeatedly positive serologic tests although no clinical signs of the disease are present. If these positive reports are obtained from different laboratories their diagnostic value is greater. Accordingly the diagnosis of syphilis seems warranted in the case reported.

2. The treatment to date has consisted of forty-one injections of nearsphenamine and forty-seven injections of a bismuth compound which is adequate treatment for the average patient with latent syphilis. The explanation for the persistently positive serologic tests in this patient should be sought elsewhere than in the inadequacy of the treatment. The spinal fluid examination was reported as negative but no mention is made of whether search was made for evidence of cardiovascular involvement especially aortic aortitis. If no aortic disease is discernible and no late mucous membrane lesions and no suggestive visceral disease can be recognized a diagnosis of late latent syphilis is justified. The experience of the Cooperative Clinical Group in the treatment of latent syphilis has been that the continued use of bismuth compounds will usually reverse the serologic reaction to negative over a period of several years. It would seem advisable therefore to give the patient two courses of bismuth a year ten or twelve injections to the course the injections to be given at weekly intervals. The bismuth therapy should be continued for a period of three years. Frequent reexaminations should be made for evidence of cardiovascular or other visceral disease during this time.

3. The Cooperative Clinic study showed that under continued bismuth therapy 80 per cent of patients with latent syphilis become serologically negative when observed for a period of ten years. If a reexamination of the spinal fluid is again negative it is probable that the patient will have no further trouble from the syphilis although annual examinations should be made after the bismuth course is completed.

4. It would not seem advisable at this phase in the course of the disease to urge the patient to become pregnant. However if she does become pregnant it will be necessary to treat her energetically during the pregnancy. The amount of treatment a woman has received for syphilis before becoming pregnant is not an assurance that she will have a normal child. On the other hand, it has been shown that the amount of treatment she received during the first five months of the pregnancy is the important factor in keeping the child from becoming syphilitic. Accordingly if the patient becomes pregnant treatment with arsphenamine and bismuth compounds should be started as early in the course of the pregnancy as is possible and should be continued throughout the period of gestation.

## NO PARALYSIS AFTER TOXOID

To the Editor—In my diphtheria immunizations I have been using the one dose alum precipitated toxoid for children 6 years of age and under. Children over 6 who have a positive Schick test have been receiving the plain toxoid (William S. Merrell Company) in two doses of 1 cc. each two weeks apart. Last month a girl aged 11 years developed a spastic and painful paralysis of the lower extremities seven days after the second injection of toxoid. I did not see the child until she had practically recovered since her physician was uncertain as to the diagnosis and she lived in a remote end of the country. At that time I was told that for a few days following the first dose of toxoid she had had a stiffness and soreness of the flexors of her left forearm (the arm in which the toxoid had been given). During the paralysis of the lower limbs following the second injection of toxoid the attending physician suspected and looked for signs of poliomyelitis but was unable to make such a diagnosis since there were no other symptoms present. It seems that I have read of a case of transient paralysis following the injection of diphtheria toxoid. However, in discussing it with another physician I was ridiculed. Has such a case been reported? Will the injection of plain diphtheria toxoid cause paralysis? Is it always transient and does recovery always result? About what percentage of children over 6 have paralysis? I do not care for literature on this subject merely your opinion.

M D Tennessee.

ANSWER.—Diphtheria toxoid does not produce paralysis. The unmodified diphtheria toxin may produce paralysis. The toxoid is obtained by treatment of the toxin with solution of formaldehyde. The resulting preparation is tested not only for its immunizing or antigenic value but also for toxic properties. Any preparation of diphtheria toxoid containing enough unmodified toxin to produce paralysis would not meet the requirements of the United States Public Health Service for diphtheria toxoid. The symptoms described do not correspond with those which occur in paralysis due to diphtheria. Occasionally injection of diphtheria toxoid may be followed by considerable pain in the region of certain joints which makes the patient unwilling to move the affected parts. This condition is not infrequently described by the patient as paralysis.

## BURNING OF THE TONGUE

To the Editor—I have a patient who has been suffering from continuous burning of her tongue during the last five months. She states that at birth her tongue was considered unusually large and at various periods in her twenty-five years of life she has had this painful tongue. At present the tongue is large enough to fill her mouth and leave definite impressions of her teeth on the sides of the tongue. White blebs form on the borders and tip. There are deep fissures. Her teeth are in good condition. Her tonsils are apparently normal except that the anterior pillars are somewhat inflamed and I have suggested tonsillectomy. She is of the so-called nervous temperament. She is at present about five months pregnant but as this painful tongue has disturbed her at other times in the past I find it difficult to place the entire blame on her pregnancy. Kindly suggest treatment.

M D Kentucky.

ANSWER.—The increase in the size of the tongue which has been present since birth may be lymphangiomatous in character. Pregnancy may have caused a temporary increase in the lymphangiomatous tissue which will probably gradually subside when the pregnancy is completed. On the other hand the swelling may be neurotic in origin and controlled by conditions that are little understood.

The burning sensation is probably due to pressure. As a local treatment it might be useful to apply 2 per cent silver nitrate solution to the fissures and blebs once a day and use a mouth wash of three parts of Dobell's solution and one part of glycerin. Should the swelling not respond to local treatment and become so marked as to interfere with speech and swallow



lowing, some more radical measures must be used. Multiple punctures with a fine pointed cautery or the excision of a wedge shaped piece of tissue from the tip and body of the tongue followed by suture of the defect thus made might be considered. The benefit of tonsillectomy in this condition is doubtful, but it might be tried, and improvement may follow.

#### SENSITIVITY TO OPHTHALMIC DRUGS

*To the Editor*—I should like any information you can possibly give me with regard to reactions of an allergic nature following the insertion of 1 per cent yellow mercuric oxide on the lower lids of the eye. I have a patient who immediately following the application developed a marked conjunctivitis with marked tearing photophobia and edema of the eyelids and face. Please omit name.

M D Chicago

*ANSWER*—The reaction here described is not at all uncommon and may be due either to yellow mercuric oxide or, what is more probable, to the petrolatum that carries the drug. It might be well to make separate patch tests on the arm of the patient with the yellow oxide and with the petrolatum. If the latter is found to be at fault, as is most likely, yellow oxide or whatever drug is to be used on the eyelids may be carried in suspension in an animal fat. If the yellow oxide is the offending agent, novoforn may be substituted. Whether the reaction is allergic or otherwise is not known.

#### FILARIASIS

*To the Editor*—I recently examined a 48 year old Negro woman whose chief complaint is intermittent hawny nonpitting edema of the left and occasionally the right leg from Poupard's ligament down. She states that this swelling first started ten years ago and that the swelling occurs only during the warm part of the year. It usually begins in May or June and disappears in September. For several days preceding the swelling there is moderately severe pain in the popliteal space sometimes extending downward into the calf of the leg and up to the inner surface of the thigh as far as the femoral triangle. Slight pain persists in these areas after the swelling has reached its maximum. The patient has never been pregnant. Her weight is 152 pounds (69 kg.). Physical examination and laboratory examinations have revealed the following: temperature 99.8 pulse 114 respirations 24 systolic blood pressure 155 diastolic 108 lungs normal. All the teeth are out there is a plate above and below. The heart sounds are pounding. The nails are heaked. The mucous membranes are very pale. The left leg from Poupard's ligament down is about 25 per cent larger than the right one which is apparently normal at this time. The leg is hawny and nonpitting after sustained pressure with one finger. The dorsalis pedis artery pulsates normally. There are a few dilated veins on the inner aspect of the left leg 3 or 4 inches below the knee. The hemoglobin is 60 per cent the white blood count 9,100 the red blood count 3,350,000 the urine normal the blood Wassermann test negative. A differential white blood count is as follows: degenerated cells 17 per cent lymphocytes 10 per cent polymorphonuclears 53 per cent eosinophils 3 per cent basophils 2 per cent endothelial cells 15 per cent. Examination of the red cells showed poikilocytosis anisocytosis polychromatophilia crenation a few nucleated cells and a few stippled cells. I have tried repeatedly to find Filaria Bancrofti in the blood both in the daytime and at night but have found none. I would be grateful to you for any help in making a diagnosis and any suggestions as to treatment. One physician in my town who has an extensive practice states he has seen five or six of these cases in his nineteen years of practice but has never been able to diagnose the disease or help the patients in any way.

L A CROWELL JR M D Lincoln, N C

*ANSWER*—While the symptoms suggest filariasis this condition is rare in the United States except in persons from the West Indies or those who have resided in Charleston, S C where there is a focus of infection. The absence of microfilariae in the blood does not contraindicate filariasis. As the edema is nonpitting and is mainly unilateral the possibility of malaria or ancylostomiasis as causal agents is unlikely. If Milroy's disease and abdominal tuberculosis are excluded it is probable that the patient's condition is filarial and it would be well to treat her by roentgen therapy the technic of which is given by Golden Ross and O'Connor F W. The Roentgen Treatment of Filariasis *Tr. Roy. Soc. Trop. Med. & Hyg.* 27:385 1934.

#### CORNEAL DYSTROPHY

*To the Editor*—I have a patient suffering from dystrophy of the cornea and I am anxious to find a remedy. The diagnosis was made by one of the most prominent men in the profession but he knew of nothing that would help. Please omit name.

M D Mississippi

*ANSWER*—There are various types of corneal dystrophy. The treatment in all of them is without good results. The form known as Salzmann's nodular corneal dystrophy can be helped that is the vision may be improved by the surgical removal of the nodules. In the *Archives of Ophthalmology* (13:598 [April] 1935) Katz and Brown described the nature of this condition and recommended the surgical removal. They had a good result in their case.

#### SYRUP CERASIAE

*To the Editor*—Will you please send me the formula for syrup cerasiae which I understand will be official in the next Pharmacopoeia?

PERRY B. PRESTON M D Newark N J

*ANSWER*—The following formula for Syrup of Cherry will be official in N F VI.

#### SYRUPUS CERASI, SYRUP OF CHERRY S.R. CERAS

Crush sour cherries (not pitted) in a grinder dissolve 0.1 per cent benzoic acid in the mixture, and allow to stand at room temperature until a small portion of the filtered juice produces a clear solution when mixed with one half of its volume of alcohol. Press out the juice from this mixture and filter, add sucrose in the proportion of 850 Gm. of sucrose to each 450 cc. of the filtered juice. Dissolve the sucrose in the juice by heat on a water bath, cool, and remove the scum. Add 20 cc. of alcohol for each 1,000 cc. of syrup.

Storage. Keep the syrup in well closed containers.

#### USE OF OSCILLOGRAPHS

*To the Editor*—I should like to know whether the instrument known as the oscillograph (recording type) has ever been used medically. By medically I mean the recording of cardiac murmurs thyroid and intra cranial bruits or other audible sounds coming from the body. With a very sensitive type of instrument it seems to me that there are possibilities with it worth investigating.

KENNETH H. ABBOTT (intern), San Bernardino, Calif

*ANSWER*—The correspondent is not specific with regard to the type of recording oscillograph he had in mind. There are the mechanical types of oscillograph, such as the sphygmograph and the Tyco's recording oscillograph. There are electrical oscillographs, such as the types used in the amplifying electrocardiograph and the cathode ray oscillograph. The mechanical types of oscillographs are obviously not sensitive enough or suited to the study of cardiac murmurs. The electrical types of oscillographs have been used for this purpose. Information on this subject is given by Johnston, F D. The Value of Sound Records in the Diagnosis of Mitral Stenosis (*Am. Heart J.* 10:654 [June] 1935).

#### CHANCROID ANTIGEN

*To the Editor*—What information have you with regard to a chancroid antigen for diagnosis and treatment? Is it available commercially? Please omit name.

M D Minnesota

*ANSWER*—A chancroid antigen for diagnosis and treatment known as dmelos vaccine is stocked by Poulenc Frères, 507 Fortune Street, Montreal, Canada. Because of United States laws it is impossible to procure it in this country. Sterilized pus from chancroidal buboes may also be used as a diagnostic antigen. The whole subject, together with a discussion of the preparation of antigen, was reported by Cole and Levin in *THE JOURNAL*, Dec 21, 1935, page 2040.

#### TONSILLECTOMY IN A PATIENT WITH HEMOPHILIA

*To the Editor*—In *Queries and Minor Notes* in *THE JOURNAL* January 4, the answer to a question on tonsillectomy in a patient with hemophilia is rather incomplete.

A study of the bleeding and clotting time of a patient with hemophilia is unproductive of postoperative bleeding. The bleeding time is always normal. The clotting time may or may not be elevated during episodes of continuous oozing. The determining factor in the blood of a patient with hemophilia is not the clotting time but rather the platelet lysis value. The platelets may be perfectly normal in fact elevated but the failure of half the platelets to agglutinate within an hour is prognostic of postoperative bleeding.

I have never been able to shorten materially the clotting time in a patient with hemophilia by the injection of serum. The most effective procedure for tonsillectomy in such a patient whatever his clotting time may be is a large transfusion immediately before operation. Surgical trauma to mucous membranes produces more marked oozing than that following skin incisions. Therefore on the slightest indication of oozing postoperatively usually on the third or fourth day in operations involving the mucous membranes a second large transfusion is indicated. The local bleeding can be arrested by packs moistened with powdered brain and epinephrine solution. But no pack should be applied until the soft clot is completely removed each time. Once major bleeding has been arrested by packing the gauze is removed and freshly cut strips of meat are applied to the surface of the wound and held there as long as possible. Local hemostatics other than fresh meat fresh blood or freshly prepared human serum are useless for the arrest of true hemophilic bleeding. Tonsillectomy in a patient with hemophilia is less troublesome by surgery than by electrical coagulation for clean cut wounds ooze less and for a shorter period of time than do ragged wounds. Electrical coagulation in a true subject of hemophilia produces no bleeding during the procedure but secondary hemorrhage follows several days later when the coagulated tissue is displaced in the healing of the mucous membrane.

I. NEWTON KIGELWASS M D New York

## Council on Medical Education and Hospitals

### THE RECENT GRADUATE AND DRUG NIHILISM

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College of Medicine

CINCINNATI

Modern medicine firmly acknowledges the fundamental role played by drug therapy in the rational treatment of disease. Through centuries of experience and observation the physician has learned the value of drugs, and, although he realizes that there are certain limitations to their use, considerable faith is placed in those preparations known to be reliable. The drugs described in the Pharmacopeia, the National Formulary and New and Nonofficial Remedies provide a wide variety of proved and dependable agents from which an adequate armamentarium can be selected. These drugs should be wholly suitable for all the physician's medical needs, and good therapeutics demands that they be used and prescribed whenever it seems desirable to do so.

Today, however, among many practitioners and especially those who have recently graduated there is a growing tendency to ignore the established principles of drug therapy and to minimize the value of standard remedies in modern practice. Judging from the restricted use now made of pharmacopeial preparations, it would appear that a wave of drug nihilism is sweeping over the profession and engulfing many members. It seems that these individuals, appropriately called nihilists, employ few reliable drugs, show but little skill in selecting those they do use, and usually prescribe insufficient quantities to permit adequate treatment. Either they are unwilling or what is more likely they do not know how to use more than a limited number of the very simplest preparations.

Unfortunately, their practice of nihilism does not apply to the proprietary drugs, good or bad which are given with little hesitancy. These compounds can be prescribed quickly by simply jotting down some easily remembered trade-name. For the "nihilist" to devote a minute or two to writing a suitable prescription seems to be impracticable, since he believes it matters little what medication is given anyway. Usually the "nihilist" tries to avoid writing a prescription. Should the patient suggest that some remedy be prescribed the doctor readily complies by giving the first preparation he thinks of—unless this effort can be saved by merely handing the patient a sample bottle of some new proprietary. With this type of physician in our midst, is it surprising that drug therapy and prescription writing are rapidly becoming lost arts?

#### EVIDENCES OF DRUG NIHILISM

For some time the pharmacists have been aware that very few pharmacopeial preparations are being prescribed. While now and then they make feeble attempts to heed the suggestions offered by trade journals to improve the turnover of standard drugs their main interest is in the more profitable proprietaries. These fast-selling compounds now occupy the conspicuous and handier places on the shelves while the galenicals have been relegated to the back rooms and basement. Few pharmacies can be found today which are exclusively devoted to the compounding of prescriptions and none without an abundance of proprietary remedies.

The pharmacist's prescription file also contains interesting information. A search through the current prescriptions written

by both the older and the younger practitioners will show that the younger man, who often is the busier, rarely writes an order for drugs, and when he does he invariably calls for proprietaries. This was shown to be true some years ago and is even more evident today. In 1930 Dr. Walter Cree<sup>1</sup> examined the prescription files of several drug stores in Detroit and found that 54 per cent called for pharmacopeial drugs, 17 per cent for a mixture of standard remedies and proprietaries, and 29 per cent for proprietary remedies alone. He noted that prescriptions in the first group were written mainly by older physicians and those in the last two groups almost entirely by the more recent graduates. Commenting on these observations, Dr. Cree aptly remarks that "the younger physician has drifted into the habit of using proprietary preparations to save time or has been guided by ostentatious advertising." Dr. Cree's contention is supported by the statements of several other writers,<sup>2</sup> who have similarly called attention to the recent graduate's shortcomings in drug therapy as well as the increased use of proprietaries in the profession.

A justifiable nihilism developed in modern times through the influence of Osler (1849-1919), who neglected therapeutics to emphasize diagnosis. This nihilism was helpful in discarding many useless polypharmaceutical preparations and in focusing attention on the experimental evidence for the action of pure chemicals. Other than hearsay there are little data to show to what extent nihilism is now practiced. Since few physicians take up the practice of nihilism intentionally but seem rather to have fallen into this habit through inability to employ drugs with success, perhaps the true reason for their nihilism can be traced to inadequate knowledge of drug therapy. This leads to a consideration of the results shown by state medical examining boards. If the graduates of today show little interest in drug therapy and appear to be doing poorly in the subjects of pharmacology, materia medica and therapeutics, it can hardly be expected that in their practice they will experience much success with the use of drugs. Those who are fortunate in having large practices will resort to the use of makeshift proprietaries, and those with few patients will soon forget what little they know of drug therapy and prescription writing. It appears therefore that much can be learned concerning not only the extent of nihilism but also its present increase, if some reliable information as to the recent graduate's knowledge of drug therapy is at hand.

#### CRITICISMS OF MEDICAL EXAMINERS

A logical source for such information was suggested by a circular letter sent to the deans of various medical schools in August 1934 by Dr. Felix J. Underwood, executive officer of the Mississippi State Board of Health. In this letter which substantiated the annoying rumors I had heard at recent medical meetings the following significant statement was made:

For several years the grades in materia medica and pharmacology have been uniformly low. Because of the particularly low grades made this year in this subject it was recommended by the examiner in that subject that all medical schools who have graduates eligible for examination by this board be notified of the findings of the board and requested to make efforts to improve or increase teaching on this subject. This is particularly necessary now when there is so much medical nihilism. (Author's italics.)

In view of this criticism it appeared that reports from other state medical boards would be instructive and would provide data from which some general conclusions could be drawn. Consequently in January, 1935 questionnaires were sent to all secretaries of state medical examining boards in this country asking their opinions of the knowledge and training recent graduates had in pharmacology, materia medica and therapeu-

From the Department of Pharmacology, University of Cincinnati College of Medicine, Cincinnati, and the University of West Virginia School of Medicine, Morgantown, W. Va. The author received assistance from Mr. Eli A. Reven in compiling data and helpful criticism from Dr. Chaucer D. Leake.

1 Cree, W. J. Is the Writing of Prescriptions Becoming a Lost Art? *J. Michigan M. Soc.* 29: 931-933 (Dec.) 1930.  
2 LaWall, C. H. Cooperation Between Physician and Pharmacist. *Am. J. Pharmacy* 104: 48-53 (Jan.) 1932. From F. E. Section of Proprietary and Nonproprietary Drugs in Hospital Prescribing. *J. A. M. A.* 94: 122-129 (Jul. 26) 1930.

tics They were asked to base their statements as much as possible on the examination results of the past few years, as well as the impression of the board's examiner in that subject of the recent graduate's knowledge of drugs and drug therapy as compared to the graduate of some years ago. In addition, these secretaries were asked to furnish on a chart the subject averages for each examination held during the past several years. Averages were requested for each subject of the ten to fifteen in which most boards hold written examinations and for each group examined during the period reported. These facts would readily allow comparison to be made between the grades for pharmacology and other subjects.

Practically every state secretary answered and voiced some opinion about the teaching of pharmacology, although suitable statistics could be secured from only twenty states. While nine state secretaries reported that they could find no fault with respect to this subject, a larger number registered complaints that the graduates of today know little about drugs and less about their use. Some of the answers received show that all

and very little of their proved physiological effects or symptomatology. Hence a diuretic is a diuretic without individual characteristics or differentiations. (Dr. T. J. Crowe, secretary of the Texas State Medical Board.)

#### MEDICAL BOARD AVERAGES

Twenty states supplied examination averages for one or more years during the period 1930 to 1935. While these states represent a fair cross-section of the country, it is to be regretted that more could not cooperate in this study. Some of the larger states explained that, since they kept only individual records and examined many graduates each year, they had neither the time nor clerical assistance necessary to compile the subject averages requested. Others<sup>3</sup> reported that since they do not examine specifically in pharmacology, materia medica and therapeutics, although questions on these subjects are included under other titles, they could furnish no data of comparative value. No answers were received from eight states.<sup>4</sup>

Judging from the difficulty encountered in accumulating the incomplete data offered here, it appears that few states take

*Partial Subject Averages for Twenty State Medical Board Examinations During 1930 to 1935*

| State           | Examinations<br>Held from | Number of<br>Examinations | Number of<br>Examinees | Subject Average                                 |                          |            |           |              |           |         |          |                       |            |            |         |            |             |                          |                              |  |
|-----------------|---------------------------|---------------------------|------------------------|---|--------------------------|------------|-----------|--------------|-----------|---------|----------|-----------------------|------------|------------|---------|------------|-------------|--------------------------|------------------------------|--|
|                 |                           |                           |                        | Pharmacology<br>Materia Medica,<br>Therapeutics | Anatomy and<br>Histology | Physiology | Chemistry | Bacteriology | Pathology | Hygiene | Medicine | Physical<br>Diagnosis | Obstetrics | Gynecology | Surgery | Pediatrics | Specialties | Medical<br>Jurisprudence | General Average<br>for State |  |
| Idaho           | Oct 1932 to Oct 1934      | 4                         | 23                     | 80  | 85                       | 91         | 85        | 80           | 78        |         | 84       |                       | 78         | 80         | 83      | 82         |             | 86.1                     |                              |  |
| Illinois        | Jan 1933 to Oct 1934      | 8                         | 455                    | 80  | 79                       | 78         | 78        | 77           | 77        | 79      | 87       | 87                    | 79         | 79         | 82      | 88         | 79          | 82.1                     |                              |  |
| Iowa            | June 1932                 | 1                         | 103                    | 86  | 84                       | 88         | 87        | 83           |           |         | 86       |                       | 80         | 80         | 87      |            |             | 86.7                     |                              |  |
| Kentucky        | June 1932 to June 1934    | 3                         | 211                    | *8  | 80                       | 84         | 85        | 84           | 87        | 70      | 82       | 91                    | 91         | 82         |         | 82         |             | 84.2                     |                              |  |
| Louisiana       | June and Dec 1933         | 2                         | 110                    | *87   | 88                       | 84         | 89        | 73           | 73        | 86      | 78       | 83                    | 78         | 78         |         |            |             | 83.6                     |                              |  |
| Minnesota       | Jan 1932 to Oct 1934      | 12                        | 428                    | 86  |                          |            |           |              |           |         | 91       | 96                    | 88         | 88         |         | 80         | 87          | 88.9                     |                              |  |
| Mississippi     | 1930 to 1934              | 5                         | 241                    | 79  | 81                       | 83         | 84        | 87           | 84        | 88      | 85       | 78                    | 84         | 84         | 85      |            | 85          | 83.4                     |                              |  |
| Missouri        | 1932 to 1934              | 3                         | 571                    | *82   | 80                       | 80         | 82        | 86           | 80        | 87      | 84       |                       | 86         | 82         | 84      | 87         | 82          | 84.1                     |                              |  |
| Montana         | 1932 to 1934              | 4                         | 29                     | 79  | 80                       | 82         |           |              |           |         | 84       |                       | 84         | 81         | 85      | 81         | 81          | 81.8                     |                              |  |
| Nevada          | 1932 to 1934              | 6                         | 18                     | 81  | 77                       | 78         | 69        | 79           | 78        |         | 78       | 78                    | 79         | 79         | 76      |            |             | 77.6                     |                              |  |
| New Jersey      | June and Oct 1934         | 2                         | 180                    | *69   | 79                       | 82         | 69        | 83           |           | 76      | 80       | 80                    | 80         | 80         | 70      |            |             | 79.8                     |                              |  |
| North Dakota    | 1932 to 1934              | 3                         | 60                     | *76   | 77                       | 77         | 80        | 81           | 82        | 82      | 70       | 79                    | 82         | 82         | 79      | 82         | 80          | 79.4                     |                              |  |
| Ohio            | Dec 1931 to June 1935     | 8                         | 1,182                  | *84   | 74                       | 84         | 70        |              | 83        |         | 84       | 76                    | 86         |            | 74      | 71         |             | 79.1                     |                              |  |
| Oklahoma        | 1932 to 1935              | 4                         | 240                    | 80  | 79                       | 90         | 87        | 87           | 90        |         | 91       |                       | 89         | 87         | 89      |            | 85          | 89.9                     |                              |  |
| Pennsylvania    | 1930 to 1935              | 9                         | 2,192                  | *81   | 76                       | 85         | 83        | 80           | 86        | 81      | 81       | 81                    | 83         | 83         | 70      |            | 81          | 81.0                     |                              |  |
| Vermont         | 1934 to 1935              | 4                         | 65                     | 83  | 84                       | 86         | 86        | 82           | 77        | 84      | 79       |                       | 89         | 87         | 80      |            |             | 84.3                     |                              |  |
| Virginia        | June 1934                 | 1                         | 127                    | 80  | 80                       |            | 77        | 80           | 83        | 85      | 91       | 91                    | 87         | 82         |         | 91         |             | 82.0                     |                              |  |
| Washington      | 1933 to 1935              | 3                         | 104                    | *80   | 73                       | 83         | 85        | 77           | 85        | 84      | 81       | 81                    | 82         | 82         | 82      |            |             | 81.0                     |                              |  |
| West Virginia   | 1932 to 1934              | 9                         | 80                     | *88   | 83                       | 87         | 86        | 86           | 83        | 83      | 86       | 84                    | 87         | 90         | 80      | 87         | 80          | 85.1                     |                              |  |
| Wyoming         | 1933 to 1935              | 4                         | 5                      | 80  | 79                       | 87         | 72        | 83           | 84        | 85      | 85       | 74                    | 83         | 83         | 85      |            |             | 81.2                     |                              |  |
| Total           |                           | 93                        | 9,383                  |   |                          |            |           |              |           |         |          |                       |            |            |         |            |             |                          |                              |  |
| General average |                           |                           |                        | 81.20   | 79.78                    | 83.83      | 81.00     | 82.00        | 82.4      | 83.4    | 83.0     | 82                    | 85.1       | 83.7       | 82.8    | 85.3       | 81.0        | 83.4                     | 83.60                        |  |

is not well with respect to the younger physician's knowledge of therapeutics. To illustrate this point, several of the more emphatic replies are presented, in part:

The Indiana board, at its January 1935 meeting expressed disapproval of the grades in these subjects and raised the passing grade from sixty to seventy-five on account of the consistently low grades in the past few years. (Dr. William R. Davidson, secretary of the Indiana State Medical Board.)

Some years ago we did have difficulty in having students realize that they were supposed to get patients well and no matter how erudite they might be in anatomy, pathology or diagnosis after all the sick person presents himself for one purpose only and that is to get well. We were amazed to find the rather elementary knowledge some excellent students had regarding materia medica and pharmacology. This was taken up with the Illinois schools at that time and the condition has been greatly improved. (Dr. J. R. Neal, secretary of the Illinois State Medical Board.)

We have to regret that the doctors now being graduated know so little about galenic preparations and we find too many from our way of thinking prescribing proprietaries and synthetic preparations. I have become cognizant of this fact as all my professional life I have been connected with a pharmacy which I now own. The larger number of prescriptions coming to us now are for the so-called medicines just mentioned. (Dr. W. Scott Noy, secretary of the Vermont State Medical Board.)

"I do know that the grades on materia medica have been below average for the past ten years. I contribute this to the fact that the men who are teaching this subject in the medical schools are not physicians engaged in active practice in medicine. (Dr. H. W. Qualls, secretary of the Tennessee State Medical Board.)

The manufacturing chemists and pharmacists are now providing the materia medica and the pharmacology for the medical profession. The graduates of today know nothing about the finer differentiations of drugs

the trouble to compile subject averages or arrange their examination results in a satisfactory statistical manner. If such data could be obtained and organized statistically by some central bureau, perhaps one maintained by the Council on Medical Education and Hospitals of the American Medical Association, the information gathered would prove of great value. It would then be possible not only to note at once where and when graduates were doing badly in some study but also, through this bureau, to work for standardization and unification of the various methods now employed by the state medical boards. Even with the small number of twenty states reported, marked lack of uniformity was noted in the subjects of examinations.

The accompanying table shows the months or the years in which the examinations were held by the states furnishing data; the number of examinations held, the number of examinees, and the general averages made in each respective subject given as well as the general average for each state in all subjects, during the period indicated. In the table the asterisk preceding the averages denotes that these figures have been compiled from an average of the highest six and the lowest six grades made in each subject. While this does not give an exact

<sup>3</sup> Alabama, Arizona, Colorado, Massachusetts, New Hampshire, Texas and the District of Columbia.

<sup>4</sup> Delaware, Florida, Georgia, Oregon, Rhode Island, South Carolina, South Dakota and Utah.

average for each subject, it is sufficiently accurate for comparative purposes and varies only slightly from the true result. Further inspection will show that some states omit examinations in certain major subjects and that only a few conduct separate examinations in the subjects of pediatrics, medical jurisprudence, and the specialties such as ear, eye, nose and throat, and urology. In some states, such as Connecticut and Minnesota, examination in the fundamental subjects comprising the first two years of the medical curriculum are conducted by basic science boards, which examine the student when he has completed this much work. Had averages for these subjects been included with those of the clinical years shown for Minnesota, perhaps the general average for this state would not have been so high.

More than 6,000 examinees are reported. The general average made in the fifteen major subjects listed was 82.8 per cent. The general average of 81.2 per cent for pharmacology, materia medica and therapeutics is the third lowest given, the lowest average being made in anatomy and histology and the next lowest in chemistry and biochemistry. Four other subjects were below average, while those which were above do not appear very much higher than the general average for all subjects. It is interesting to note, in view of recent widespread criticism of our present-day knowledge and practice of obstetrics, that in this survey this subject showed, next to pediatrics, the highest average—suggesting that our graduates are well versed in theory if not in practice.

An inspection of the results given for individual states shows that Minnesota reported the highest general average of 88.9 per cent and Nevada, with only few examinees, the lowest of 77.6 per cent. The lowest figure given for any subject is 69 per cent, which was the average for pharmacology and also biochemistry in New Jersey and for biochemistry in Nevada. When the subject averages of each state are compared it will be seen that the results shown for pharmacology are the lowest of all for the states of Kentucky, Montana and North Dakota and as low as or higher than only one other subject in New Jersey, Mississippi, Oklahoma, Minnesota and Idaho. While similar observations may be made perhaps for the two other low subjects, it is apparent that pharmacology deserves its place as thirteenth on the list of subjects reported here.

Sets of questions on pharmacology, materia medica and therapeutics for examination held during the period reported on were obtained from most of these states. A study of these questions shows that while some variation exists of course none are especially difficult. The majority are of the general type that should be easily answered provided the student has a fair knowledge of the subject.

The purpose of this brief survey has been to present definite evidence to the medical profession that our recent graduates know little about the use of drugs when they begin the practice of medicine. The statistics serve to substantiate the current rumors frequently heard about the shortcomings of our younger physicians. While considerations for improving this serious situation are the immediate concern of the teaching profession, a plea is made to the practicing physician to endeavor to do what he can to keep out of the ranks of nihilism and improve his own selection and utilization of drugs. The practitioner can accomplish this by giving more attention to discussions on desirable drug therapy and proved newly introduced remedies that appear regularly in ethical medical journals and less to the self-praising advertisements that fill uncritical medical publications. To his surprise the physician will often find that if he reviews standard textbooks on drugs and therapeutics much worth while information is offered a great deal of which may have been previously overlooked. As for prescriptions it matters little whether they are written in metric or apothecary systems if the drugs prescribed can be depended on to do what is desired of them.

1 den and Bethesda avenues

## Medical Examinations and Licensure

### COMING EXAMINATIONS

ALASKA Juneau March 3 Sec Dr W W Council Juneau  
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY Written examination for Group B applicants will be held in various cities throughout the country March 14 Oral examination for Group A and B applicants will be held in Kansas City Mo May 11 12 Sec Dr C Guy Lane 416 Marlboro St Boston  
AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28 Applications must be filed not later than February 28 Oral clinical and pathological examination of all candidates will be held in Kansas City Mo May 11 12 Applications must be received not later than April 1 Sec Dr Paul Thins 1015 Highland Bldg Pittsburgh (6)  
AMERICAN BOARD OF OPHTHALMOLOGY Kansas City Mo May 11 and New York Oct All applications and case reports must be filed sixty days before date of examination Asst Sec, Dr Thomas D Allen 122 S Michigan Ave Chicago  
AMERICAN BOARD OF ORTHOPEDIC SURGERY Kansas City Mo May Applications should be filed with the secretary before April 15 Sec, Dr Fremont A Chandler 180 N Michigan Ave Chicago  
AMERICAN BOARD OF OTOLARYNGOLOGY Kansas City Mo May 9 Sec Dr W P Wherry 1500 Medical Arts Bldg Omaha  
AMERICAN BOARD OF PEDIATRICS Kansas City Mo May 9 Sec Dr C A Aldrich 723 Elm St Waukegan Ill  
AMERICAN BOARD OF PEDIATRY AND NEUROLOGY St Louis Mo May 8 9 Sec, Dr Walter Freeman, 1028 Connecticut Ave Washington D C  
AMERICAN BOARD OF RADIOLOGY Kansas City Mo May 8-10 Sec Dr B R Kirklin Mayo Clinic Rochester Minn  
CALIFORNIA Los Angeles March 9 12 Reciprocity Los Angeles March 18 Sec Dr Charles B Pinkham, 420 State Office Bldg Sacramento  
CONNECTICUT Basic Science New Haven Feb 8 Prerequisite to license examination Address State Board of Healing Arts 1895 Yale Station New Haven Medical (Regular) Hartford March 10 11 Endorsement Hartford March 24 Sec Dr Thomas F Murdock 147 W Main St Meriden Medical (Homeopathic) Derby March 10 Sec Dr J H Evans 1488 Chapel St New Haven  
IOWA Des Moines Feb 25 27 Div Division of Licensure and Registration Mr H W Grefe Capitol Bldg Des Moines  
MAINE Portland March 10-11 Sec Board of Registration of Medicine Dr Adam P Leighton 192 State St Portland  
MASSACHUSETTS Boston March 10-12 Sec Board of Registration in Medicine Dr Stephen Rushmore 413 State House Boston  
NATIONAL BOARD OF MEDICAL EXAMINERS Parts I and II Feb 12 14 May 6-8 June 22 24 and Sept 14 16 Ex Sec Mr Everett S Elwood 225 S 15th St Philadelphia  
NEVADA Reciprocity Carson City Feb 3 Sec Dr Edward E Hamer Carson City  
NEW HAMPSHIRE Concord March 12 13 Sec Board of Registration in Medicine Dr Charles Duncan State House Concord  
OREGON Basic Science Portland March 21 Sec Mr Charles D Byrne University of Oregon Eugene  
PUERTO RICO San Juan March 3 Sec Dr O Costa Mandry Box 536 San Juan  
VERMONT Burlington Feb 11 13 Sec, Board of Medical Registration Dr W Scott Nay Underhill  
WEST VIRGINIA Charleston March 16 State Health Commissioner Dr Arthur E. McClue Charleston  
WYOMING Cheyenne Feb 10 11 Sec Dr G M Anderson Capitol Bldg Cheyenne

### Maryland (Homeopathic) December Report

Dr John A Evans, secretary, Board of (Homeopathic) Medical Examiners reports the written examination held at Baltimore Dec 10-11, 1935. The examination covered 9 subjects and included 70 questions. An average of 70 per cent was required to pass. Two candidates were examined both of whom passed. One physician was licensed by reciprocity, September 30. The following school was represented:

| School   | PASSED                  | Year Grad | Per Cent         |
|--|-------------------------|-----------|------------------|
| Hahnemann Medical Col and Hospital of Philadelphia | (1935)                  | 84        | 86               |
| School   | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
| Hahnemann Medical Col and Hospital of Philadelphia | (1907)                  |           | Penna            |

### Alabama Reciprocity Report

Dr J N Baker secretary Alabama State Board of Medical Examiners reports 16 physicians licensed by reciprocity from July 3 through Nov 25 1935. The following schools were represented:

| School  | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|---|-------------------------|-----------|------------------|
| Northwestern University Medical School            | (1934)                  |           | Michigan         |
| University of Louisville School of Medicine       | (1929)                  | (1932)    | Kentucky         |
| Louisiana State University Medical Center         | (1935)                  |           | Louisiana        |
| Tulane University of Louisiana School of Medicine | (1933)                  | (1933)    |                  |
| Washington University School of Medicine          | (1912)                  |           | Missouri         |
| Medical College of the State of South Carolina    | (1929)                  |           | Georgia          |
| McHerry Medical College                           | (1934)                  |           | Tennessee        |
| University of Tennessee College of Medicine       | (1934)                  | 2         | Tennessee        |
| Vanderbilt University School of Medicine          | (1934)                  | 2         | Tennessee        |
| Medical College of Virginia                       | (1933)                  |           | Virginia         |

## Book Notices

**Injury and Incapacity with Special Reference to Industrial Insurance** By H. Ernest Griffiths M.S. F.R.C.S. Surgeon Albert Dock Hospital London. Cloth Price \$5 Pp 270 Baltimore William Wood & Company 1935

As a basis for this book, it was thought necessary to investigate a large number (50,000) of histories of accidents and to trace them from the date of injury to the time of resumption of full work. This investigation was required on account of the differences of opinion expressed by medical witnesses when asked at law courts to give a prognosis in cases of injury. The hospital surgeons generally give a much more favorable prognosis than the panel doctor (general practitioner), because the surgeon bases his prognosis on the length of time before the man will be discharged from treatment and the panel doctor on the length of time for which he will have to give certificates before the man ultimately resumes his work. One large insurance company anonymously opened its books for the purpose of this author's statistical study. The first part of the book describes disabilities following injuries of the head, chest, back and abdomen, fractures of the upper and lower limbs, nerves, muscles and tendons, dislocations and diseases of joints of the upper and lower limbs, amputations, and miscellaneous injuries. Tables for periods of disability from light and heavy work and for different ages are given. The language used is not highly technical and impresses one as being directed much more to the lay than to the medical man. The second part of the volume discusses the various types of workers so that the reader may have an accurate knowledge of the physical requirements of the workmen engaged in the specific job under consideration, and lists the incapacities arising from definite injury or loss. In this part there is much repetition which might have been condensed into reference tables. An interesting and helpful index of occupations is given to fit each trade or employment into the list of twenty-four principal types, which are described in detail. The American reader may be a little confused to find burr takers out (wool combing) barfillers (hosiery), can dodgers, chasers, cheese winders, daubers (coke and by-products), fitment polishers, greasy birlers, gulley cleaners, monocasters, raisers (pen making), sole examiners, throstle piecers, willeys and washers, so many of these trades have been lost in the mechanization of American labor.

**Comparative Psychology: A Comprehensive Treatise. Volume I. Principles and Methods.** By Carl J. Warden, Ph.D., Assistant Professor of Psychology, Columbia University; Thomas N. Jenkins, Ph.D., Assistant Professor of Psychology, New York University; and Lucien H. Warner, Ph.D., Research Associate, Department of Zoology, Pomona College. Psychology Series. Edited by Albert T. Poffenberger, Ph.D., Professor of Psychology, Columbia University. Cloth Price \$4.50 Pp 506 with 141 illustrations. New York: Ronald Press Company, 1935.

This is the first volume of a massive three volume, comprehensive treatise on which these authors have been working for more than a decade. Their attitude is that comparative psychology is a biologic science rather than a form of philosophy and they have tried to keep their whole study on a basis of experimental procedures rather than speculation. On the completion of the series it will be found that the subject of comparative psychology has been comprehensively covered and that it has been done in a systematic way, closely allied to the method of the zoologists, in that the traits and psychologic characteristics of the various biologic groups are considered, with the evolutionary tree being kept strongly in mind. The present volume is largely one dealing with the techniques used today in studying comparative psychology. There is a chapter giving the historical development of the science of comparative psychology in considerable detail. Succeeding chapters discuss the point of view and the biologic foundation of comparative psychology. There is a brief chapter dealing with the classification and analysis of animal behavior. The succeeding two chapters form at least a third of the book. In the first of them methods are outlined in detail showing apparatus, equipment and techniques of testing receptive capacity, and since tests of receptive capacity to some extent delineate reactive capacity, the chapter on receptive capacities is followed by one describing means of testing reactive capacity. Mazes, problem solving

apparatus, selection boxes, discrimination apparatus and other equipment devised by comparative psychologists are discussed in considerable detail and are illustrated by drawings and reproductions of photographs. The present volume closes with a long discussion of morphology and to some extent of the physiology of the various animal forms, particular stress being placed on the nervous system and effective capacity. There is an extensive bibliography, and the literature seems to have been carefully covered. A knowledge of comparative psychology and its methods should be of great aid to physiologists and psychologists, but so far as the present volume is concerned it is difficult to see how it would help the physician or the psychiatrist. The latter, however, will no doubt find much of value in the succeeding volumes, hence a knowledge of what is in the present one will make a study of those volumes easier. One can commend these authors on their careful, painstaking work and emphasize the fact that comparative psychology will undoubtedly at some time have a relationship to psychiatry and neurology somewhat similar to that of animal experimental physiology and medicine.

**Manuali pratici di medicina biopsicologica. N. 7. La nuova eugenica.** Del Prof. Dott. Caelmiro Frank, docente di neuropatologia nella r. Università di Roma. Paper. Price 9 lire Pp 129 with 1 illustration. Rome: Edoardo Tinto, 1935.

**L'immunità acquisita mediante l'educazione psichica integrale.** Del Prof. Dott. Casimiro Frank, docente di neuropatologia nella r. Università di Roma. N. 11. Manuali pratici di medicina biopsicologica. Paper. Price 6 lire Pp 119. Rome: Edoardo Tinto, 1935.

Dr. Frank is one of the leading neurologists in Rome. Until somewhat recently he has been primarily interested in neuroanatomy and neuropathology, but the present two brochures are two parts of a series of twelve volumes intended to delineate his theory of biopsychology. Briefly stated, this theory is based on the author's observation that there are differences in cortical development in the sound and in the unsound mind. He links up as a background for his theory many of the more modern but seemingly unrelated observations such as those of von Economo regarding the cyto-architectonics of the central nervous system and the mnemonic psychology of Semon. He also stresses radioactive processes of the cerebrum, which he considers to be of great importance. The first volume, dealing with the 'new eugenics,' is really a critical analysis of the various types of Darwinian and Lamarckian evolutionary theory. He presents these at some length, after which he discusses his own biopsychologic doctrine, pointing out that he has developed a new natural philosophy based on the various cerebral association processes. Following this he discusses the criticisms of the Darwin theory, bringing in the ideas of such discredited critics as George Bernard Shaw. He concludes this volume with a discussion of the problems that are brought up by his new biologic philosophy. Many of the factors are in disagreement with our American ideas, for instance, he asserts that delinquency is due to aplasia of the frontal lobes.

The second pamphlet is a rather general discussion of the author's theory of immunity. He thinks that the development of the cerebrum has a great deal to do with the acquisition of immunity and he discusses at some length the difference between the older psychiatric theories and his newer theory, in which such accepted techniques as psychoanalysis and hypnosis are rather cavalierly handled. He feels that there are techniques of building up the nervous system so that both organic and functional nervous disorders as well as parasite infection and tumor growth can be prevented. The present handbooks, while complete in themselves are hard for the reader to grasp, because they presume a knowledge of Dr. Frank's earlier works and of the other pamphlets in the series, some of which have not yet been published. In one or two chapters in each brochure he gives a brief and rather ingenious description of his theory but one insufficient for full comprehension. Also in the volume in which he discusses acquiring immunity one does not get a clear picture of how he is going to bring this about. It is quite possible that, after all the volumes of the series have appeared, much will be found that is interesting and valuable in the theory.

In volume 7 there is a short glossary of terms that one might find helpful, for the author uses many neologisms (making his writings more difficult for the American reader), and at the



end of that volume is an interesting graph showing the processes of consciousness in health and in disease. The classification that he gives on this graph does not agree with the Anglo-Saxon conception of psychopathology. It will probably be several years before the significance of Frank's work will be clear, but those who are able to read Italian should find much of interest in his rather novel and ingenious ideas.

**Nervous and Mental Diseases: A Simplified and Comprehensive Presentation of Nervous Diseases and Insanity.** By Bernard S. Maloy M.D. With an Introduction by John H. Wigmore A.M. LL.B. LL.D. Fabrikoid. Price \$7.50. Pp. 551 with 40 illustrations. Indianapolis: Bobbs-Merrill Company, 1935.

This carelessly compiled volume is intended to be of service to lawyers engaged in medicolegal work and for busy doctors who have not the time to survey the details of the field of neurology and psychiatry. There is no indication that the author's own experience in the field enables him to perform that most difficult task of abstracting the more important facts for general practitioners and lawyers. His material is entirely culled from other books and his illustrations are borrowed. Much of the material has been given in abstracted form for the sake of brevity and the errors are too numerous to mention. The work is not recommended to the legal profession or to the practitioners of medicine.

**Angines lympho monocytaires, agranulocytoses, leucémies leucopéniques.** Par le Professeur Jean Sabrazès, médecin des hôpitaux de Bordeaux et René Barle, interne des hôpitaux de Bordeaux. Papier. Price 40 francs. Pp. 363 with 18 illustrations. Paris: Masson & Cie, 1935.

This is a unique monograph dealing with current hematologic enigmas. During the past five years however a great deal of clinical interest has been evinced by physicians in this country over agranulocytosis. This subject is generously discussed being given about half of the space. The authors discuss the clinical, hematologic and pathologic manifestations in infectious mononucleosis, agranulocytosis and subleukemia and in aleukemic lymphadenosis and leukocytosis. Treatment is considered in detail but it is doubtful whether anything of a fundamental character has been contributed. The prevailing information, both American and European is well covered however. Besides reviewing current medical literature the authors cite their personal experiences. The subjects are well treated from both the hematologic and the clinical aspects and most of the current advances have been incorporated. The monograph should interest the practicing physician as well as physicians specifically interested in pathology and hematology. The citation of cases illustrating a point under discussion clarifies for the reader some of the more abstract phases of the subject. One of the most refreshing sights is the cosmopolitan character of a well chosen and current bibliography.

**A Terminology of Operations of the University of Chicago Clinics.** By Miller Terry Jenkins M.D. Paper. Price \$1. Pp. 99. Chicago: University of Chicago Press, 1935.

This is another effort directed toward establishing a terminology that could easily be set up as an operation index file in the record library of any hospital. It likewise is supposed to possess great value in determining accurately true mortality results of any operation if any mechanical classification scheme could achieve such a purpose. No matter what clearing house center might be established the easily understood variations of the operator's skill, the patient's resistance and unavoidable human errors as well as omissions might negate its statistical value in that regard. Possibly the effort in its admission that local usage is not ignored lacks the breadth and scope of the "Names of Surgical Operations" prepared by the Special Committee of the Western Surgical Association which was intended not only for national but for international use of librarians or statisticians and as a means of valid simplification and reduction in the number of names that must be employed by clinicians, medical writers, editors and students already overburdened with memory facts. This volume from the University of Chicago giving due credit to the Western Surgical Association's "Names of Surgical Operations" still further reduces the number of names of operations from 742 to 695 and yet retains ninety-five operations bearing the names of surgeons in apparently unnecessary inclusion. Coming from its source one is surprised to find the name of Touloukian.

misspelled. The book represents a further laudable attack on superfluous names of operations and may be found helpful by hospital librarians. Its rather weak binding and too thin cover may interfere with its length of life in office handling.

**Mother and Baby Care in Pictures.** By Louise Zabriskie R.N. Cloth. Price \$1.50. Pp. 196 with 187 illustrations. Philadelphia: Montreal & London: J. B. Lippincott Company, 1935.

This exceedingly interesting volume teaches antepartum care and baby care with some excellently developed pictures and with a minimum amount of text matter. The book follows well established procedures for the most part and is all together an exceedingly useful work. Physicians will find it most helpful for recommendation to intelligent patients and they will find its presentation so definite as to answer in a common sense way the majority of questions that occur to prospective mothers and those responsible for the care of the child.

**The Special Procedures in Diagnosis and Treatment: An Outline for Their Understanding and Performance.** By Don Carlos Hines M.D. Clinical Instructor in Medicine, Stanford University. Paper. Price \$1. Pp. 66 with 2 illustrations. Stanford University: Calif. Stanford University Press, 1935.

This booklet is an outline of a course of lectures and demonstrations given for the fourth year students of the Stanford University School of Medicine. The methods given have been used in the medical wards of Stanford University hospitals for many years. Four pages are devoted to observation of body temperature, pulse and respiration. There are five pages on the regulation of the activity of patients and general hygienic measures. There are twelve pages on subcutaneous medication. Blood transfusion, the stomach tube, local measures directed toward the bowel, hydrotherapy, thoracentesis, abdominal and pericardial paracentesis, spinal puncture, mechanical measures in the treatment of edema, oxygen and carbon dioxide therapy are all presented in brief outline form. A few well chosen references are given at the end of each subject. The booklet should prove to be useful to interns in dealing with various emergencies and complications. It easily fits into any coat pocket and has a durable spiral binding.

**An Introduction to Human Anatomy.** By Clyde Marshall M.D. Department of Anatomy, School of Medicine, Yale University. Cloth. Price \$2.50. Pp. 385 with 262 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

This is a small textbook for elementary students. It consists of 314 pages plus thirty-six on embryology. The text is brief, reliable and remarkably comprehensive, considering its brevity. Only the larger gross structures are mentioned. Brief paragraphs on function are included in each section. The illustrations are well selected from standard books and include microscopic anatomy. The author has done well in devoting in an elementary textbook so large a proportion of space to illustrations. The brief, concise text, the notes on function and the good illustrations make it an excellent elementary textbook.

**Atlas of Pathological Anatomy, Volume II.** Compiled by E. K. Martin, M.S., F.R.C.S. Issued under the direction of the editorial committee of the British Journal of Surgery. Cloth. Price \$15. Pp. 475 with illustrations. Baltimore: William Wood & Company, 1935.

The second volume of this atlas is well up to the standard of its predecessor. Here the sections included are pathologic lesions of articulations, thyroid gland, tongue, pharynx, esophagus, intestinal tract, bladder, prostate, testis and penis, bone cysts and miscellaneous conditions. Each chapter begins with a clear, succinct general discussion of the lesions illustrated. Each picture is accompanied by a brief clinical history and a description of the macroscopic appearance of the specimen. The colored reproductions may be considered classic. A word of praise must be spoken also for the binder and the printer. In addition to being highly instructive, the volume is a joy for the eye.

**La diphtérie maligne.** Par R. Poin, professeur agrégé à la Faculté de Médecine. Papier. Price 18 francs. Pp. 112 with 13 illustrations. Paris: Masson & Cie, 1935.

This booklet reviews the genesis, the morbid anatomy, the clinical manifestations, the diagnosis, the prognosis and the treatment of the severe forms of diphtheria. Succinct accounts are given of the various clinical forms of the disease.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice Failure to Remove Steel Particle from Eye**—The head of a nail struck the plaintiff in the eye on August 23. Dr Bulpitt, a physician-employee of the defendant, to whom the plaintiff went for treatment, examining the eye with a magnifying glass, found a lineal laceration of the cornea, with air bubbles present. He removed some particles of rust but did not examine the laceration to see how far it extended or attempt to extract anything therefrom. He washed out the eye with boric acid, instilled a mild protein silver solution and covered the eye with a pad, which was repeated daily until September 3, when he discharged the patient as recovered. On October 23 the plaintiff returned, complaining of pain and diminishing sight. The physician treated him for seven days, when he sent him to Dr Osburn, an eye specialist, who removed a piece of steel from the eye. Some days later the retina collapsed and the plaintiff finally lost the entire sight of his eye. He then brought suit against the defendant.

At the trial, Dr Osburn was permitted to testify that when he first examined the plaintiff's eye he found a puncturing injury in the cornea, and a window or tear in the iris with scars and inflamed vitreous, and that by the use of an ophthalmoscope he determined the presence of a piece of steel embedded in the vitreous, which he removed. The loss of sight, he further testified, was caused by the presence in the patient's eye of a foreign body, that the removal had nothing to do with the loss of vision, and that the length of time the particle remained in the eye contributed considerably to the loss of vision, as a result of the inflammation resulting from its presence. Another physician testified that the customary means used by physicians to determine the presence or absence of a foreign body in the eye are the ophthalmoscope and the x-rays. Notwithstanding this evidence, the trial court entered a judgment of non-suit and the patient appealed to the district court of appeal, second district, division 1, California.

The evidence just noted said the district court of appeal, was sufficient to establish a prima facie case. The legitimate inference to be drawn from it is that the attending physician should have suspected the presence of a foreign body in the eye, that in failing to make such examination as would make reasonably certain that there was nothing in the eye he failed to exercise that degree of care which the practice of his profession requires, and that this lack of care was the proximate cause of the loss of sight. It is difficult to understand how a physician examining the injured eye and viewing the air bubbles and the laceration present could feel that he had exercised ordinary care and skill without making any examination to see how deeply the injury extended, or doing anything to give reasonable assurance that there was no foreign body in the eye. The attending physician even neglected to use x-ray apparatus that was in his office. For these reasons the court concluded that the trial court erred and reversed the judgment of non-suit.—*McBride v Saylin (Calif)*, 48 P (2d) 179

**Dental Practice Acts Advertising to Practice "Modern Dentistry Cheap" as "Advertising Prices for Professional Service"**—Donohue sought to enjoin the Oregon state board of dental examiners from revoking his license to practice dentistry. The trial court sustained a demurrer interposed by the board and dismissed the suit. Donohue then appealed to the Supreme Court of Oregon.

Donohue had inserted in a certain newspaper an advertisement which stated among other things that he practiced not cheap dentistry but modern dentistry cheap. The board claimed, as the basis for the revocation proceedings before it, that this advertisement constituted advertising prices for professional service, which the Oregon dental practice act denominates as unprofessional conduct and as such cause for revoking the license of an offending licensee. The question to be determined then, said the Supreme Court, is whether or not

advertising to practice "modern dentistry cheap" is embraced in the prohibition against "advertising prices for professional service." If it is, the action of the trial court was proper, as the board in instituting the revocation proceedings was acting lawfully. While in the advertisement complained of Donohue did not state any definite or fixed price, nevertheless he conveyed to the public the idea that his charge for dental services would be lower than that ordinarily made for such work. The court could not agree with Donohue's contention that he could advertise in any manner whatsoever "prices for professional services" provided only he avoided stating any definite or fixed price. Were the plaintiff's contention to be upheld, continued the court, he could with equal propriety advertise that he would do dental work cheaper than any other dentist. All sorts of catch phrases covering prices as a lure or bait for the public would be the order of the day by those who care not for the ethics of a profession. However, the plaintiff is not dealing in commodities. He is a member of a learned profession. The rules of the market place do not apply.

That it was the intention of the legislature to prohibit such kind of advertising relating to prices for dental services, the Supreme Court said, is further indicated by a consideration of the history of the enactment of the pertinent portion of the dental practice act. House Bill 148, eventually enacted as Laws, 1933 c 166, as originally introduced enumerated as unprofessional conduct, which was to be a ground for the revocation of a license, "advertising definite, fixed prices when the nature of the professional service rendered and the materials required must be variable." This was amended to read "advertising prices for professional service," and, as amended, was enacted. Hence the court concluded that the legislature was not content merely to prohibit advertising fixed or definite prices. It intended to go further and put a ban on all kinds of advertising relative to prices which have a tendency to lure the ignorant or credulous.

The court accordingly affirmed the decree of the lower court dismissing the plaintiff's bill for an injunction.—*Donohue v Andrews (Ore)* 47 P (2d) 940

**Malpractice Drainage Tube Left in Abdomen—Accrual of Cause of Action**—The physician-defendant operated on the patient, Jan 3, 1931. Apparently, a 9 inch rubber tube was used to drain the wound, which the defendant neglected to remove after it had served its purpose, allowing it to remain in the patient's abdomen until he removed it on Sept 26, 1932. In the interim between the two operations the patient suffered from "numerous running sores within the abdomen." The patient and her husband instituted action for malpractice on Jan. 7, 1933, but the trial court entered a judgment for the physician, holding that the suit was barred by the statute of limitations. The plaintiffs then appealed to the district court of appeal, second district, division 2, California.

An action for malpractice, said the district court of appeal, sounds in tort and not in contract and must be instituted within one year from the occurrence of the negligence which forms the basis of the action. It is necessary, then, to determine what event started the running of the statute and when that event occurred. It seems certain that this action was not brought within one year from the date of the operation itself or within one year from the first date of the wrongful maintenance of the tube in the abdomen. The plaintiffs, however, claimed (a) that the operation from its beginning to the end of the postoperative treatment was one act and that the statute did not begin to run until the treatment ceased or (b) that from the date on which the tube should have been removed but was not, to the date of its removal there was a continuing tort and that the maintenance of the tube in the abdomen for any time within the year prior to the institution of the suit constituted a cause of action. However the district court of appeal could find no basis for those contentions in any California cases. Many California cases in the opinion of the court either hold or are consistent with the holding that the initiatory wrongful act starts the running of the statute. The initiatory wrong in this case was leaving the drain tube in the abdomen after the day on which it should have been removed. The statute of limitations runs from that day, which the court held in any event was more than one year prior to the institution of this suit.

The court believed that the doctrine of fraudulent concealment, if applied to the facts alleged in the pleadings of this case, would toll the statute. But said the court, counsel for the plaintiffs concede in their brief that an allegation in the complaint that the defendant knowingly permitted the tube to remain in the abdomen meant simply that the defendant left it there through gross negligence and did not consciously know that it had been left therein. This concession takes the case out of the doctrine of fraudulent concealment.

For the reasons stated, the judgment in favor of the defendant was affirmed—*Huysman v Kirsch (Calif)* 47 P (2d) 332

**Malpractice Sponge Left in Abdomen**—The patient was operated on at the Santa Clara County Calif hospital by the physician-defendant assisted by a hospital intern and by various hospital nurses. Subsequently another physician removed a sponge from her abdomen. She died later and her administrator sued the defendant. From a judgment on the verdict of the jury for the defendant, the plaintiff appealed to the district court of appeal, first district division 2 California.

The district court of appeal found no error in an instruction given by the trial court which told the jury that the mere fact that a sponge was found in the patient's abdomen would not support a verdict against the operating physician and that to recover, the plaintiff must establish that the sponge was left there because the physician failed to exercise ordinary care. The plaintiff contended that the alleged negligence in this case was negligence per se and the jury should have been so instructed but the court believed the correct principle as announced in *Jackson v Hausard* 45 Wyo 201, 17 P (2d) 659 was that

The question of due care was not a question of law but was one for the jury to decide subject of course to the ordinary right of the trial judge in such cases

The trial court gave another instruction which among other things stated that if it were just as possible that the sponge was left there by the negligence of another as by the defendant's negligence then the jury's verdict must be in favor of the defendant. It also instructed the jury that if it found from the evidence that the intern or the nurses present at the operation were not in the pay or employ of the defendant then any negligence, if any, committed by any of the assistants cannot be charged to the defendant unless the jury found that the defendant directed the act complained of or that he knew of the existence of such negligent conduct and had a chance to remedy the fault but failed to do so. The plaintiff contended that these instructions were erroneous because the relation of respondeat superior existed between the defendant and the assistants. With this contention however the district court of appeal did not agree, holding that the relation of master and servant did not exist between the defendant and any other person present in the room at the time the operation was performed.

The judgment in favor of the defendant was accordingly affirmed—*Alex v Ryan (Calif)* 47 P (2d) 771

**Workmen's Compensation Acts Perforation of Peptic Ulcer Allegedly Due to Strain**—Abelseth had evidenced the symptoms of a peptic ulcer since 1916 receiving medical and hospital treatment therefor at various times. In the course of his employment in October 1932 while he and a fellow workman were unloading a 200 pound cabinet from a truck he had to assume a "slight twisting position. He immediately experienced severe stomach pains was nauseated and was forced to cease work. An operation performed on him that same day revealed a perforation of a gastric or duodenal ulcer. He instituted proceedings under the workmen's compensation act of California but the industrial accident commission denied him compensation and he appealed to the district court of appeal first district division 1 California.

The acceleration or aggravation of a preexisting disease said the district court of appeal is an injury attributable to the occupation causing such acceleration or aggravation and hence is compensable. The question to be determined is whether the perforation of the ulcer was the result of the muscular exertion arising in the course of the workman's employment or whether it resulted from the natural progressive nature of the ulcer itself. The medical evidence is in substantial conflict. The

workman's family physician testified, in response to a hypothetical question, that the strain of lifting could be and probably was the precipitating cause of the perforation at that particular moment. A physician who had assisted in the operation stated in a letter to the commission that it was conceivable that a penetrating ulcer might be caused to rupture by unusual exertion or a strenuous lifting whereby a marked increase in intra-abdominal tension would be brought about but that, however, it is not unusual for penetrating peptic ulcers to rupture spontaneously while the patient is at rest. A physician who examined the workman at the request of the commission stated that in his opinion it was very improbable that the perforation was the result of lifting. His opinion, he stated, was in part based on the fact that the operating physician had informed him that no adhesions were present and that a microscopic test had shown the base of the ulcer to be thin and the muscular coat replaced by granular tissue—a soft, extremely weak tissue. Because of the conflict of the medical testimony, the district court did not feel warranted in disturbing the award of the commission denying compensation to the workman—*Abelseth v Industrial Accident Commission (Calif)*, 47 P (2d) 516

**Malpractice Burns Sustained by Patient from Upset Sterilizer**—The plaintiff, who had been sick with the "grip" for two or three weeks went to the defendant for a general physical examination. While in the defendant's office, he complained of feeling faint and the defendant placed him on a stool and instructed him to hang his head down. Suddenly the patient lost consciousness fell forward from the stool, upsetting a nearby sterilizer, and sustained a burn from the hot water. In a suit for damages, the jury returned a verdict for the plaintiff for \$5000 but the trial court gave judgment for the defendant notwithstanding the verdict. The plaintiff appealed to the Supreme Court of Pennsylvania.

The plaintiff contended that the defendant was negligent in that knowing him to be in a fainting condition, he placed him on a stool without a back three or four feet from a receptacle containing boiling water. The plaintiff's counsel argued that the patient was a business invitee of the physician and that hence the case was governed by rules applicable to that relation rather than by those concerning the liability of a physician for negligent treatment of a patient which involve questions as to the proper exercise of professional skill and judgment. With this argument however, the Supreme Court could not agree. If the plaintiff's injury, the court said, were the result of some defect in the premises or of some negligent arrangement of the appliances therein there might be some merit in the argument. In this case the accident took place while the physician was actually treating the patient, and as a result of the method which he employed in doing so. The inquiry was, therefore, not whether something was wrong with the premises but whether something was wrong with the defendant's treatment of his patient. The plaintiff called no witness to testify that it was not proper treatment under the circumstances for the defendant to seat the plaintiff on a stool and to instruct him to put his head down when he complained of feeling faint. A number of medical witnesses testified that this was the proper thing to do. Their conclusion from hearing the entire testimony was that the plaintiff had not fainted but that he had had a convulsion. In the absence of proof that what the defendant did was not according to such reasonable care skill and diligence as is ordinarily exercised in his profession there may be no recovery.

The boiling water observed the court was but incidental to the entire happening. Its only effect was probably to cause more serious injuries than would have occurred if some other object had been the causal factor. If the plaintiff had fallen from the stool and injured himself by contact with some other object in the physician's office the legal situation would be the same. No witness testified that the care exercised under the circumstances was not all that should have been exercised. The evidence did not indicate that the defendant should have anticipated that the plaintiff would fall and the fact that he did fall in itself was no evidence of negligence on the part of the defendant. The Supreme Court affirmed the judgment of the trial court for the defendant—*Saltzer v Reclord (Pa)*, 179 1 229

## Society Proceedings

### COMING MEETINGS

American College of Physicians Detroit Mar 26 Mr E R Loveland  
133 South 36th Street Philadelphia Executive Secretary  
American College of Radiology Chicago, Feb 16 Dr Benjamin H  
Orndoff 2561 North Clark Street Chicago Executive Secretary  
American Heart Association New York, February 3 Dr H M Marvin  
50 West 50th Street New York Acting Executive Secretary  
American Orthopsychiatric Association Cleveland Feb 20 22 Dr George  
S Stevenson 50 West 50th Street New York Secretary  
American Society for Experimental Pathology Washington D C  
Mar 25 28 Dr Shields Warren 195 Pilgrim Road Boston Secretary  
American Society for Pharmacology and Experimental Therapeutics  
Washington D C Mar 25 28 Dr E M K Geiling 710 North  
Washington Street Baltimore Secretary  
American Society of Biological Chemistry Washington, D C Mar 25 28  
Dr H A Matill Chemistry Bldg State University of Iowa  
Iowa City Secretary  
Annual Congress on Medical Education Medical License and Hos-  
pitals Chicago Feb 17 18 Dr W D Cutter 535 North Dearborn  
Street Chicago Secretary  
Federation of American Societies for Experimental Biology Washington  
D C Mar 25 28 Dr E M K. Geiling 710 North Washington  
Street Baltimore Secretary  
Mid South Post Graduate Assembly, Memphis Tenn Feb 11 14 Dr  
A F Cooper Goodwyn Institute Building Memphis Tenn Secretary  
Pacific Coast Surgical Association Del Monte Calif Feb 20 22 Dr  
Edgar L Gilcrest 384 Post Street San Francisco Secretary  
Southeastern Surgical Congress New Orleans March 9 11 Dr Benjamin  
T Beasley 478 Peachtree Street N E Atlanta Ga Secretary

### CENTRAL SOCIETY FOR CLINICAL RESEARCH

*Eighth Annual Meeting held in Chicago Nov 1 and 2 1935*

The President, DR CYRUS C STURGIS, Ann Arbor Mich,  
in the Chair

*(Concluded from page 328)*

#### Thrombocytopenia Due to Food Allergy

DRS THEODORE L SQUIER and FREDERICK W MADISON, Milwaukee It has been shown that the granulocytes in the circulating blood may be depressed as the result of an allergic response to drugs, and in a less marked degree after the ingestion of specific foods. It seemed reasonable that the thrombocytes might be expected to respond similarly. Loewy has observed such a thrombocytopenic reaction to allyl isopropyl-acetyl-carbamide, and Peskin and Miller to quinine and ergot. Evidence is submitted to indicate that in certain hypersensitive individuals the ingestion of some specific foods may cause a definite depression of the thrombocytes and the clinical picture of purpura as well. Depression of thrombocytes was observed after the ingestion of some, not all, of the foods to which hypersensitivity was demonstrated. Marked clinical improvement and recovery has been observed in patients with typical thrombocytopenic purpura following elimination of specific reacting foods, and subsequent ingestion has been followed by a prompt fall in the platelet count.

#### DISCUSSION

DR. OVID OTTO MEYER Madison, Wis I would like to ask whether the authors have tested any cases in which the spleen had previously been removed. If so, whether or not the results were modified.

DR FRANK J HECK, Rochester, Minn Was the bleeding time tested or the clot retraction noted? Also, what method of platelet counting was used? It seems to me that they must have an extremely accurate method.

DR LEON G ZERFAS, Indianapolis The relationship of food allergy to thrombocytopenia is interesting. During the course of observation my associates and I have noted no evidence of a decrease in the number of platelets in the circulating blood when rabbits were repeatedly sensitized to foreign protein such as horse serum. Repeated attempts at sensitizing and desensitizing rabbits by alternating periods of subcutaneous and intravenous injections of foreign protein finally resulted in almost complete destruction of the bone marrow as well as certain changes in other organs. When such marked pathologic changes in the marrow resulted, a reduction in the number of blood platelets along with other formed elements in the blood can be expected. This phase of the work, however, needs more careful study.

DR THEODORE L SQUIER, Milwaukee We have not had an opportunity to observe any of these patients following splenectomy. The clotting time was determined and there was no retractility of the clot. The platelet counts were made by the pipet method in a counting chamber, using Diner's fluid for dilution. We regard this reaction as only one of the possible factors that may be involved in thrombocytopenic purpura. Reactions of this nature have been observed by others to drugs. We believe that our observations of such reactions to specific foods offer to the clinician a more hopeful clinical approach than has been possible heretofore.

#### A Possible Test for Activity of Peptic Ulcers

DR MEYER B MARKS, Chicago Permeability of the adult human gastro-intestinal tract to foreign protein (egg albumin) has been studied with precipitin tests on blood and urine. The urines of normal patients without gross lesions in the mucosa as a rule do not give positive tests, urines from patients with active peptic ulcers gave a positive test in 75 per cent of the cases, and urines from patients with healed ulcers gave negative tests in 80 per cent of the cases. This test promises to be valuable in the differentiation of ulcer from other upper abdominal lesions and in determining the question of activity of ulcers under treatment.

#### The Role of Indigestible Food Residues in Laxation

DRS RAY D WILLIAMS and WILLIAM H OLARSTED, St. Louis Of late we have been concerned with the physiologic effects of the indigestible residue fraction (lignin, cellulose and hemicellulose) in foods. In a previous paper we demonstrated by a new method that "crude fiber" is not a chemical entity. Our method, which determines separately lignin, cellulose and hemicellulose, made possible a reinvestigation of (1) the determination of these products in foods containing indigestible residues, (2) what becomes of each of these fractions when fed to the human subjects, and (3) what is the role of cellulose, lignin and hemicellulose in their effects on the bulk of the stool.

In outline of our plan, the experiment was to isolate indigestible residues from natural occurring sources with as little change as possible in their original composition. These residues were obtained from carrots, cabbage, canned peas, wheat bran, alfalfa leaf, corn germ meal, cottonseed meal, sugar beet pulp, cellulose flour and agar agar. We added these materials to a basal diet free from indigestible residue and analyzed the stools for lignin, cellulose and hemicellulose, volatile fatty acids and soluble reducing substances. Three medical students were used as subjects. Each material was fed with the basal diet for one week. Three basal periods were interspersed between the periods of food residue feedings. By analysis of the feces it was found that hemicellulose disappeared in larger amounts than cellulose and that lignin disappeared least.

When there was a high percentage of lignin in the residue less hemicellulose and cellulose disappeared from the intestine.

The comparison of the stool weights after feeding of these residues seemed to indicate that the amount of cellulose and hemicellulose disappearing during the passage through the human intestine influenced the volume of the feces more than the amount of residue fed or the amount recovered in the feces.

Stool volatile fatty acids were greatest in the case of residue that disappeared most during the passage through the gastro-intestinal tract.

A rating made by the subjects themselves as to the relative laxative efficiency of the materials corresponds quite closely to the degree that hemicellulose and cellulose disappeared from the intestine.

The sum and substance of this physiologic experiment goes to prove that the so called bulk of the human diet is not inert material going through the intestinal tract unchanged but rather that it is acted on by bacteria to a great degree and that it is these split products of bacterial action that stimulate the intestine.

#### DISCUSSION

DR. DONALD P ABBOTT, Chicago It has been known for years that the more undigested food comes through the small bowel into the colon, especially the carbohydrate food, the more fermentation occurs. When this carbohydrate undergoes bacterial decomposition which is spoken of as fermentation, numerous acids and gases are produced which stimulate peristalsis. The fact must not be lost sight of that gases stretching the

colon will stimulate peristalsis. The fatty acids naturally would be one of the factors that would stimulate peristalsis also. The carbohydrate is probably the more marked cause of laxation, as it comes through undigested with the production of various gases and acids in the colon. The cellulose content of vegetables will vary somewhat in its consistency. By cooking vegetables one reduces the character of the cellulose to more or less the same level of irritability and also makes the carbohydrate content more accessible to the digestive enzymes.

DR. WILLIAM H. OLMSTED, St. Louis. If the term "bulk" is used in the sense of something in the diet that goes through the intestinal tract unchanged, it is a misleading term. The residues isolated from carrots, cabbage and peas are all subsequently broken down during the passing through the intestinal tract. The residues from feeding stuffs, alfalfa, corn germ meal, cottonseed meal and bran were also broken down. These substances were acted on by bacteria in varying degrees and there seems little doubt that those residues which were more extensively broken down proved to be most laxative. Where the residues contained substantial amounts of lignin, which is very resistant to bacterial action the resulting stools were hard and so irritating that bleeding resulted. Bran is one of these substances and is not particularly adapted to producing laxation. Several of the other products examined were superior to bran in this respect. I am inclined to believe that the volatile fatty acids are stimulating to the intestine but there may be other metabolic products which are equally stimulating. We feel that some of the products which we have examined may prove more satisfactory than bran and agar, and perhaps cost less.

#### Effect of Splanchnic Resection and of Vagotomy on Gastric Motility

DRS. LOUIS E. BARRON and GEORGE M. CURTIS and WILLIAM T. HAVERFIELD, A. B. Columbus, Ohio. Gastric motility was investigated on two patients before and after bilateral splanchnic resection for juvenile diabetes. This was accomplished in two stages. Graphic records were obtained by the balloon method prior to and after each stage. Adequate control observations were made. Following unilateral splanchnic resection there ensued short periods of motility alternating with short periods of quiescence. This was observed for approximately one week. Subsequently there ensued intense persistent gastric motility and an augmentation in gastric tonus. Following bilateral splanchnic resection the results simulated those following unilateral splanchnic resection. Gastric motility also was studied on a patient with a symptom complex of vagotonia. Observations were made during an adequate control period, during a period of intense atropine medication and following left abdominal vagotomy. The results indicated that during atropine medication there was a slight decrease in activity and in tonus. Following vagotomy there ensued a decrease in motility with a marked increase in the duration of gastric quiescence. The number of contractions during a period of activity was also diminished. Also the influence of the extrinsic innervation on the emptying time of the stomach was studied. Following unilateral splanchnic resection practically no change was observed. During the control period it was four hours and forty-five minutes. Following unilateral splanchnic resection it was four hours and forty-one minutes, a difference of four minutes. Following bilateral splanchnic resection the average emptying time was three hours and forty-two minutes, a difference of one hour and three minutes. In the patient with vagotonia the average emptying time during the control period was six hours and forty-nine minutes. During intense atropine medication it was five hours and twelve minutes. Following vagotomy the average emptying time was two hours and forty-nine minutes, four hours shorter than during the control period. The post-operative convalescence of all patients was uneventful. Subsequent clinical improvement occurred.

#### DISCUSSION

DR. W. M. CRAIG, Rochester, Minn. The observations which Dr. Barron and his colleagues have made seem to be extremely important to those who are interested in the function and surgery of the sympathetic nervous system. It is such observations that aid in clarifying much of the confusion that exists with regard to an understanding of the physiologic activity of the splanchnic nerve. Prior to our early operations

on the splanchnic nerves, my associates and I were apprehensive of their effect on the gastro-intestinal tract, because in experimental studies on animals a marked reaction was observed. To study our patients preoperatively, we made careful analyses of gastric acidity and observed motility under the fluoroscope. The observations made before and after operation did not indicate any marked change, and we have not noticed any discomfort on the part of the patients. Dr. Barron and his colleagues have made a more careful and precise observation on the gastric motility, both before and after operation, and it may prove of value in the further study of these cases. I should like to ask Dr. Barron whether or not there were any clinical manifestations of these changes.

DR. GEZA DE TAKÁTS, Chicago. The question that arises in connection with the observations of the authors is whether the increased peristalsis and more rapid emptying time of the stomach are in any way related to the increased sugar tolerance of patients who have been subjected to splanchnic nerve section. To overcome the objection that this increased sugar tolerance is merely due to a more rapid passage and therefore a decreased absorption of sugar from the gastro-intestinal tract, I have used intravenous sugar tolerance tests and shown that even under such conditions the utilization of sugar has increased. With regard to the great increase in gastric motility as observed by the authors, I have observed a peculiar type of pain which does not correspond to an intercostal segmental type and which I rather suspected of being due to pyloric spasm. At any rate, such pain coming on soon after operation and persisting for several weeks may be relieved by atropine. I have studied the emptying time of only two patients before and after splanchnic nerve section and found them to be decreased to approximately two thirds of the preoperative values. In connection with the observations of the authors on the effect of vagotomy on peristalsis I may cite a patient of Dr. Keeton's at the Illinois Research and Educational Hospital who had a "nervous" diarrhea for thirty years. The number of rectal contractions were studied with the balloon method. In this case I sectioned the pelvic parasympathetic nerves and obtained a decrease in the number of stools from twelve to an average of two a day. The balloon registered smaller contractions with much longer periods of quiescence after the operation. This is the first case known to me in which the parasympathetic supply to the distal half of the colon had been successfully cut. The most important conclusion from the work of the authors is that the extrinsic denervation of the gastro-intestinal tract results in permanent changes in motility and is not temporary, as has been so often stated.

DR. N. S. DAVIS III, Chicago. Was there any effect on the blood pressure in splanchnic resection?

DR. LOUIS E. BARRON, Columbus, Ohio. We made observations on the gastric acidity before and after unilateral and bilateral splanchnic resection and also before and after vagotomy. We observed no changes of any magnitude in the acidity following any of these surgical procedures. Concerning the clinical manifestations although it is reported that abdominal cramps frequently follow bilateral splanchnic resections, we observed them only in one instance. We had no reason to connect them with the operation. I would prefer to leave discussion of the diabetic question to a subsequent report. We did note however a decrease in the insulin requirement on both patients. One patient required 90 units of insulin daily during the preoperative period. Following bilateral splanchnic resection it dropped to 30 units. Concerning blood pressure changes we noticed a transitory drop which persisted for about a week or two. After that it gradually returned to its original level.

#### Gastric Acidity Following Operations for Gastric and Duodenal Ulcer

DR. W. ALTMAN WALTERS, Rochester, Minn. Studies of gastric acidity were carried out in a group of 136 patients operated on for gastric and duodenal ulcer by gastro-enterostomy, pyloroplasty and gastric resection of the first Billroth and Polya types. Reduction in gastric acidity occurs following all these procedures although most frequently and to the greatest extent following gastric resection of the posterior Polya type. Reduction in acidity also occurs following the first Billroth operation and posterior gastro-enterostomy. When anterior gastro-



enterostomies are performed for duodenal ulcer combined with entero-anastomosis (the latter preventing regurgitation of any great amount of duodenal and jejunal secretion into the stomach), very little reduction of gastric acidity takes place. Such reduction of acidity appears to be relative and is largely the result, in most cases, of dilution of gastric secretion by the intestinal secretions. Contrary to the ideas of many, relative achlorhydria does not occur in all cases of gastric resection performed for duodenal ulcer, even though a large portion of the stomach is removed. Gastric ulcer, on the other hand, appears to be biologically quite different in the response of acid gastric secretion following operative procedures. Partial gastrectomy of any type, including removal of the gastric ulcer, is followed by a relative achlorhydria in practically every case. This occurs also in a high percentage of cases in which local excision of small gastric ulcers has been combined with gastro-enterostomy. This probably accounts for the fact that gastrojejunal ulcer practically never occurs following operative procedures for gastric ulcer.

#### DISCUSSION

DR. CLARENCE F. G. BROWN, Chicago. I should like to ask whether the author had the opportunity to test the acidity perhaps two, three or five years after operation, and, if so, did the acidity return to normal?

DR. WALTER L. PALMER, Chicago. The conclusions drawn are in general quite in accord with my experience. However, I should warn against drawing conclusions with regard to the gastric chemistry on the basis of test meals carried out over periods of one or two hours only. In many of these cases of apparently low acidity, high values will be found if the stomach is aspirated at frequent intervals over a period of from twelve to twenty-four hours, or if repeated test meals are run. This is particularly important in the study of the effects of gastro-enterostomy and partial gastrectomy for duodenal ulcer. In those cases in which free acid is apparently markedly lowered, continued observation will usually show a high level of free acid at some time or other.

DR. ADOLPH SACHS, Omaha. I should like to ask Dr. Walters whether the decrease in hydrochloric acid is due to a dilution process or to an actual reduction in acidity, or to both, and if he considers both, which factor he thinks is the most important.

DR. HEINRICH NECHELES, Chicago. A number of patients that had complaints after subtotal gastrectomy had either too high or too low gastric acidity. In the latter case gastroscopy revealed the presence of gastritis, and administration of dilute hydrochloric acid was beneficial. If the aim of subtotal gastrectomy is abolition of gastric acidity, so that duodenal reflex cannot be neutralized and bacterial growth cannot be checked, gastritis may occur consequently.

DR. WALTERMAN WALTERS, Rochester, Minn. Of further importance in the study of postoperative gastric acidity is the point that was brought out in the discussion, namely, that one must have more information about the acidity tests over a long period of time following operation associated with a study of the clinical results in order to arrive at any definite conclusion regarding the postoperative acidity factor. Four years ago Dr. Snell and I studied the relation of gastritis to duodenal ulcer. I think we were able to prove that gastritis in this country in relation to duodenal ulcer exists in very few cases in contrast to its association with duodenal ulcer in certain European countries. This is important, for the advocates of gastric resection as a routine treatment for duodenal ulcer have based their opinion on the importance of such procedure in that, first it removed the areas of associated gastritis and, secondly that the relative achlorhydria which followed gastric resections made recurrence of ulcer impossible, and failure to obtain a relative achlorhydria following gastric resection occurred because an insufficient amount of stomach had been removed. I believe it is true that if a relative achlorhydria is obtained and persists the patient stands very little chance of developing a recurring ulcer. Unfortunately, however, even after extensive gastric resections achlorhydria fails to follow in about 50 per cent of the cases. Among forty-seven cases reported from an eastern clinic in which there was persistent acidity after gastric resection, ulcer recurred in nine cases. In gastric resections the

risk of operation is from five to ten times greater than the risk with gastro-enterostomy, the risk depending on the size and degree of the infiltration of the duodenal ulcer and the difficulty of closing the end of the duodenum after the removal of the ulcer. It is necessary to keep an open mind on the problem of gastric resection in the treatment of duodenal ulcer until more knowledge has been obtained of the changes in acidity that follow and the role they play in recurring ulcers.

#### Effect of Adrenal Cortex Extract on Sodium Metabolism in Addison's Disease

DRS. E. J. KEPLER and A. M. SNELL, Rochester, Minn. To demonstrate physiologic activity of parenterally administered adrenal cortex extract Kendall metabolic studies were conducted on three patients with severe Addison's disease in whom the intake of sodium was reduced to minimal amounts. Provided the dosage of extract was adequate it was possible to keep these patients in good condition for comparatively long periods of time on virtually salt-free diets. Under these conditions the loss of sodium through the urine was negligible. The evidence indicates that a potent cortex extract is physiologically as active when given to patients with Addison's disease as when administered to adrenalectomized animals.

#### DISCUSSION

DR. A. M. SNELL, Rochester, Minn. This work was done with the intention of answering the objections of Rogoff and others as to the efficacy of adrenal cortex extract in Addison's disease. That it is clinically effective can hardly be disputed, in fact, the acid test of this extract is its ability to keep the patient with Addison's disease in good condition and in sodium equilibrium while on a salt-free diet. Before anything was known about the relation of the extract to sodium metabolism, it was found that the original cortical extracts prepared by Swingle and Piffner would keep patients in good condition without reference to salt, a point that seems to have been more or less forgotten. There are some problems yet to be solved. It is not known whether a normal individual will store sodium when given the extract or how much sodium can be stored by patients with Addison's disease on a high intake of sodium alone or with a high intake of sodium and cortex extract. These are matters which will have to be cleared up before the metabolism of sodium in normal individuals and in patients with adrenal insufficiency is fully understood.

DR. JACOB MEYER, Chicago. A patient with Addison's disease, whom I am observing at present, although receiving 10 cc. of adrenal cortex extract, is also taking as much as 26 Gm. of sodium chloride daily but is excreting approximately the same amount of chlorides. The patient developed symptoms during the night, and a rather large dose of sodium chloride was administered throughout the night. It was found that the sodium was administered throughout the night the patient improved. I think this is an important observation and it may be that there are periods in the course of the day or night when the content of sodium is less than at other times.

DR. WILLIAM S. HOFFMAN, Chicago. I have made serum total base determinations in several hundred cases and I have very seldom found a higher than normal sodium concentration. If the figures on the chart are correct, it seems to me that the authors have demonstrated that they can maintain a higher than normal sodium by giving large injections of cortex extract. Some of the values for sodium are 150 milliequivalents per liter or higher, which is much above the normal. If these values are correct, they are physiologically quite significant.

DR. M. A. BLANKENHORN, Cincinnati. I wonder whether Dr. Kepler considered the extract made by Dr. Kendall the same as that made by the Swingle and Piffner method and sold as eschatin.

DR. E. J. KEPLER, Rochester, Minn. There is very little known about the hourly variation in the excretion of sodium in Addison's disease. It is likely that at times the loss of sodium may be rapid. This may account for the sudden changes that may occur in the clinical picture. We have observed in a number of patients with Addison's disease high sodium values after salt and cortex extract were given. A characteristic feature of Addison's disease is the inability to maintain sodium in the tissues. The extract seems to act as a deterrent factor

and enables the patient to remain in sodium balance. The preparation that we are using is made by Dr Kendall and it is not the same as eschiatin

#### An Adrenal Cortex Extract of Value in Addison's Disease

DRS WILLARD O THOMPSON, SAMUEL G TAYLOR III, PHEBE K. THOMPSON and WILLIAM S HOFFMAN Chicago Treatment of four patients with marked Addison's disease for from six to eight months with a new adrenal cortex extract (Wilson's) has demonstrated that 1 With no more salt than that in a normal diet, a dose of 10 cc or more daily keeps patients in a satisfactory condition and maintains the concentration of sodium, potassium and chloride in the serum within normal limits, whereas nausea and vomiting slowly develop when the patients receive only 5 cc daily 2 When a crisis develops, the extract alone will not revive the patient Salt is required 3 A large daily dose of salt alone will preserve life for a long time, but less salt and less extract appear to be required if used together than if used separately These observations suggest that one of the functions of the adrenal cortex is to control the concentration of salt in the body However when the body has been depleted of salt, the extract cannot function until a supply is made available

#### DISCUSSION

DR E J KEPLER, Rochester Minn We have used Wilson's extract and found it potent In one case the disease was controlled with Wilson's extract when the salt intake including that in the diet did not exceed 6 Gm daily Recent work on the pathologic physiology of adrenal insufficiency has shown that the excretion of sodium ions is greater than the excretion of chloride ions For example Harrop and his associates found that "following withdrawal of injections of cortical hormone from the dog which is being given an ordinary unsalted diet, the loss of urinary sodium in equivalent weights exceeds that of chloride by 10 to 20 per cent" Better results are obtained in the treatment of adrenal insufficiency, either clinical or experimental if in addition to sodium chloride sodium is given in the form of sodium citrate or sodium bicarbonate to compensate for the discrepancy that results from the increased excretion of sodium over that of chloride

DR WILLIAM S HOFFMAN Chicago I should like to comment on the total base determination We have decided to make total base determinations rather than sodium determinations because in our hands the former are much more accurate than the latter Besides in spite of the fact that adrenal cortex extract is apparently concerned with sodium metabolism no one has demonstrated that sodium has any other function than to add to the total base that is available for neutralization of acid and for the maintenance of osmotic equilibrium Therefore total base values probably give a better physiologic picture than do sodium values The recent investigations that have been made possible by the newer potent extracts of the adrenal cortex are not only important because of their obvious therapeutic value and because of their value in the study of the physiology of the adrenal gland but also because they are furnishing clues as to the mechanism of excretion of sodium and urea That urea rises as sodium drops in the blood has been known for some time This phenomenon occurs not only in Addison's disease but also in Bright's disease in intestinal obstruction and in severe diarrheas We don't know the reason for it but we already know that the rise in urea cannot be due to a lack of excretable water for Loeb has shown that the retention of urea occurs during the period of diuresis Similarly in a case at the Presbyterian Hospital in which a great deal of water and salt had been lost by repeated gastric lavage we saw that the urea became elevated even though the patient was getting and excreting about 3000 cc of fluid a day The urea concentration promptly returned to normal when 9 Gm of salt was added to the diet It is difficult to avoid drawing the conclusion that the retention of urea is due in these cases to active resorption by the renal tubules and that it is concerned in some way with an effort to maintain the normal osmotic pressure of the body fluids

DR FRANK B KELLY Chicago I had the privilege of observing two patients shown on the charts one with pneumonia She was as near death as any patient I ever saw In

regard to the medical student, the opportunity I had of watching him and his testimony as to how much better he felt when he was getting a sufficient amount of extract than when on salt alone indicates the effect which the extract used by Dr Thompson has on patients with Addison's disease

DR WILLARD O THOMPSON Chicago The analogy between the parathyroid glands and the adrenal cortex mentioned by Dr Kepler is of interest Just as the parathyroid glands affect the metabolism of calcium and phosphorus, so the adrenal cortex affects the metabolism of sodium In hypoparathyroidism relatively enormous doses of calcium will prevent the development of tetany, and in Addison's disease relatively enormous doses of sodium will prevent the development of crises

#### Excretion of Ferrocyanide in Relation to Urea Clearance

DR WAYNE GORDON, Chicago The rate of excretion of a standard intravenous dose of ferrocyanide has been proposed as a test of renal function by Steiglitz and Knight An evaluation of the ferrocyanide excretion test was attempted by comparing the simultaneous urea clearance with the ferrocyanide excretion through a range of clearances from 6 to 130 per cent of normal Normal subjects excreted 24 per cent or more of ferrocyanide in one hour, and those with lower clearances excreted less ferrocyanide in a roughly parallel fashion When the results were discordant collateral evidence pointed to error in the two tests with about equal frequency Ferrocyanide administration did not effect the clearance In the absence of hematuria the test is very simple Its relation to glomerular filtration and its value in following the course of progressive renal diseases are *sub judice* It promises considerable value in the detection of moderate degrees of renal impairment

#### The Action of Potassium Salts and Their Excretion by the Kidney

DRS NORMAN M KEITH and MELVIN W BINGER Rochester Minn The procedure followed was to give normal individuals and patients with dropsy a measured amount of a given potassium salt by mouth for several days under strict experimental conditions and to compare the urinary output of water and other constituents with that in control periods before and after the ingestion of salt The salts taken were the chloride, nitrate bicarbonate acetate and citrate Potassium salts when ingested by a normal individual are quickly absorbed and a high percentage is excreted by the kidneys The volume of urine increases and the concentration of potassium in the urine may rise to fifty times that of the serum Similar effects have been obtained in selected cases of dropsy Chemical studies in the urine included estimations of the hydrogen ion concentration the excretion of the electrolytes potassium, sodium, chloride, sulfate, phosphate and bicarbonate, and the urea and ammonia nitrogen The decided increase in potassium was accompanied by a shift in the  $pH$  to the alkaline side, the most marked shift occurring after the bicarbonate acetate and citrate These three potassium salts were evidently excreted by the kidney chiefly as bicarbonate The increase in potassium bicarbonate was accompanied by a marked decrease in the ammonia nitrogen, a condition similar to that found after the ingestion of sodium bicarbonate

#### DISCUSSION

DR M HERBERT BARKER Chicago I appreciate Dr Binger's remarks relative to potassium because for years I have been laboring in fear of giving it clinically, especially to those with vascular or renal disease For five years I have given potassium chloride in variable quantities to quite a large number of patients and so far I have not experienced evidence of toxic manifestations In fact I do not know what the toxic manifestations are aside from gastro intestinal disturbance The physiologist notes cardiac arrest, but clinically in the long series of patients taking it as long as four years I have not noticed anything that could be regarded as toxic manifestations from the potassium Dr Binger brought up the question of toxic manifestations at 50 mg I have only a few patients that have reached a level of 35 mg per hundred cubic centimeters in the blood At that level there was some evidence of drying of the skin, and dehydration beyond a point which we felt might be favorable Untoward symptoms have not been seen I think that this work of Drs Keith and Binger

clearly establishes the diuretic efficiency of potassium nitrate and that it should dispel the fear relative to potassium administration

#### Acacia in the Treatment of Nephrotic Edema

DR. ALEXIS F. HARTMANN and ANNE M. PERLEY, M.S., St. Louis. Study of the effects of acacia administered to nephrotic human subjects and to normal animals has been continued since our preliminary paper was read before this society in November 1932 and published in *THE JOURNAL* in January 1933. Improved methods of qualitative estimation of acacia in body tissues and fluids have increased our knowledge of the fate of this material after injection and have aided in securing effective dosage and in avoiding overdosage.

#### DISCUSSION

ANNE M. PERLEY, M.S., St. Louis. In our studies of ascitic and edema fluid in patients with chronic nephritis and nephrosis we have found very low protein values, usually less than 0.1 Gm per hundred cubic centimeters. In five samples of ascitic fluid with protein concentrations between 0.03 and 0.09 Gm per hundred cubic centimeters we found no acacia, although the serum acacia was between 0.7 and 2.0 Gm at the time the fluids were collected. One sample of edema fluid with 0.05 Gm of protein per hundred cubic centimeters contained no acacia when the serum had 2.0 Gm. In three samples of ascites in which we noted a slight increase in protein content, the values being from 0.23 to 0.28 Gm we found very small amounts of acacia, about 0.05 Gm, with the serum acacia between 0.7 and 1.7 Gm per hundred cubic centimeters. We had two samples of ascitic fluid which showed markedly increased protein values, and we found very appreciable amounts of acacia in them. In one the protein was 1.5 the acacia 0.4 and the serum acacia 1.0 Gm per hundred cubic centimeters. In the other the protein was 1.3, the acacia 1.8 and the serum acacia 3.0 Gm. I think it can be said that acacia appears in these fluids in appreciable amounts only when the protein content is considerably increased. In our studies of the excretion of acacia by the kidney we observed that not nearly all the acacia is excreted within two or three weeks after its administration. One patient who received 90 Gm. in five days excreted 13 Gm during this time and 15 Gm more in the next ten days, making a total loss during the period of 31 per cent of that injected. A second patient who received 150 Gm in five days lost only 13 per cent in fifteen days. Two other patients who received 90 Gm in three days lost only about 13 per cent in from ten to fifteen days. A fifth patient receiving 60 Gm in four days lost 21 per cent in twelve days. It is interesting to note that the two patients who lost the largest percentages had severe chronic nephritis; the others were diagnosed as having nephrosis. Drs. Keith, Power and Wakefield of the Mayo Clinic have pointed out that acacia persists in the blood serum for long periods after its intravenous administration. They had an opportunity to observe one patient three years after she had received acacia and found the colloid still present in the serum. Our observations confirm theirs. One patient who received 60 Gm still had 22 mg per hundred cubic centimeters in her serum four years and seven months later. One who received 90 Gm had 64 mg after one year and ten months; another who had been given 60 Gm had 20 mg one and a half years later and one who received 624 Gm nearly three years later still had 350 mg per hundred cubic centimeters. I think these observations indicate that acacia probably reenters the blood stream very slowly from the tissues that had taken it up at the time of administration.

DR. LOUIS LEITER, Chicago. In view of the difficulties encountered both with the massive administration of acacia over a short period and the smaller individual doses given over longer periods it should not be hard to conclude that acacia is a dangerous material to use in children with nephrotic edema.

DR. LEE FOSHAY, Cincinnati. Is there any knowledge anywhere which might point to possible deleterious effects of acacia on the pneumococcus?

DR. MELVIN W. BINGER, Rochester, Minn. It seems to me that patients who will not respond to other diuretics may respond to acacia. My associates and I have given it to a number of patients and we have not had the good results that Dr. Hartman has had probably because we have not given it

in sufficient concentration. It has to be given in sufficiently concentrated form or the desired diuretic effect is not obtained. I feel that it should not be given in all cases of edema, but only in those presenting low serum protein in which the simpler diuretics have failed.

DR. ALEXIS F. HARTMANN, St. Louis. Dr. Binger's point is well taken. We emphasized that acacia should be used only in those cases that did not respond to safer and easier methods. The red count goes down and so does the hemoglobin, but we did not observe changes in the white count. The one boy who died of pneumonia had a very high white count.

#### Diuretic Properties of Organic Mercurial Compounds

DRS. JOHN R. PONTIUS, LATHAN A. CRANDALL and LAURENCE E. HINES, Chicago. This is a study of the diuretic effect on edematous cardiac patients of monomercured diallyl amide of saccharic acid, dimercured diallyl amide of tartaric acid, monomercured monosallylamid of gluconic acid and monomercured diallyl amide of malic acid. By animal experiments these compounds have been shown to possess a ratio of minimum lethal dose to minimum diuretic dose that was two to three times higher than salyrgan. The diuretic response on edematous patients was unusually effective. No toxic reactions were observed in the patients studied.

#### DISCUSSION

DR. L. N. KATZ, Chicago. I wonder whether with these new preparations any attempt was made to find whether theophylline would further enhance the diuretic action.

DR. DON SUTTON, Chicago. Last year we used these preparations in our ward in the Cook County Hospital and in the cardiac clinic, and at no time did we observe any toxic effects.

DR. LATHAN A. CRANDALL, Chicago. In answer to Dr. Katz's question, we were unable to find any definite potentiation by the addition of theophylline in animal experiments.

DR. JOHN R. PONTIUS, Chicago. We did not try intramuscular injections. We know that any preparation of mercury given over a long period of time carries a certain element of risk and therefore the introduction of a less toxic product should be welcomed.

#### Uremia from Blood Transfusion

DRS. ELMER L. DEGOWIN and HAROLD F. OSTERHAGEN and MARIE ANDERSCH, PH.D. (work begun by DR. C. W. BALDRIDGE, deceased), Iowa City. Dogs were divided into two groups, one of which was placed on a diet with an alkaline ash so that the  $pH$  of the urine was around 8.5. The other group was placed on a diet of chopped beef mixed with 58 Gm of ammonium chloride a day so that the  $pH$  of the urine was around 6.0. Repeated transfusions of hemolyzed dog erythrocytes were given to both groups. In both groups slight or moderate nitrogen retention often occurred for several days after transfusion. The four dogs on alkaline diets all survived many transfusions. Of five dogs on acid diets, four died in uremia from four to ten days after transfusions. No dog died after a single transfusion. Autopsies were held on all dogs and the pathologic picture found in the kidneys corresponded to that described in human beings dying from transfusion anuria or from blackwater fever.

#### DISCUSSION

DR. CLARENCE F. G. BROWN, Chicago. As the authors intimate, there is more in this problem than meets the eye at present. They make me think back to some work done fifteen years ago by one of our emeritus members, Esmond R. Long, now of Philadelphia. He sensitized the common pig by giving it a tuberculous lesion; he then put an extract of crushed tubercle bacilli into the renal circulation and produced the same picture. Why such an apparently harmless substance as hemoglobin going into the circulation under certain conditions creates such havoc is difficult to understand. No one is as suspicious of the word allergy as I am, yet I think it must be considered here.

DR. ELMER L. DEGOWIN, Iowa City. We are not prepared to make any comment at present, in that we have not produced this condition on our first transfusion. We are working on it now.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to THE JOURNAL in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### American Journal of Anatomy, Philadelphia

57 351 546 (Nov 15) 1935

- Structure and Development of Lymphatic Tissue in Intestine of Albino Rat Katharine Pattee Hummel Ithaca N Y—p 351  
Observations on Changes in Blood Vascular Endothelium in Living Animal E R Clark and Eleanor Linton Clark Philadelphia—p 385  
Medullary and Nonmedullary Erythropoiesis with Especial Reference to Plasma Cell Erythrophage or Russell Body Cell and to Erythrocytic (Erythrolytic) Function of Lymph Nodes and Hemal Nodes N A Nichols Philadelphia—p 439  
Comparative Anatomic Investigation of Osseous Labyrinth (Vestibule) in Mammals B G Turkewitsch Samarkand U S S R—p 503

#### American Review of Tuberculosis, New York

32 617 736 (Dec) 1935

- Present Concepts of Tuberculous Infection and Disease Their Principles and Application E L Opie New York—p 617  
First Infection Type Tuberculosis Its Treatment and Prognosis J A Myers F E Harrington C A Stewart and Marjorie Wolff Minneapolis—p 631  
Outlook for Eradication of Tuberculosis W H Frost Baltimore—p 644  
Diabetes and Tuberculosis I Analysis of Eighty Cases from Standpoint of Tuberculosis G B Myers and R M McKean Detroit—p 651  
Experimental Diabetes and Tuberculosis in Dog M M Steinbach S J Klein and M Deskorowitz New York—p 665  
Hepatic Function in Pulmonary Tuberculosis Further Studies J H Steidl and F H Heise Trudeau N Y—p 677  
Cinchophen Oxidation Test of Hepatic Function in Pulmonary Tuberculosis Study of Its Variation J H Steidl and F H Heise Trudeau N Y—p 684  
Results of Abdominal Compression in Pulmonary Tuberculosis B Gordon Philadelphia—p 686  
Study of Excretion of Silicon in Urine of Tuberculous Patients Discussion of Role of Silicon in Tuberculosis H Lee Cincinnati—p 694  
Nontuberculous Pulmonary Disease Simulating Tuberculosis in Children C W Nissler N J Sokoloff and L Cohen Philadelphia—p 702  
Calcium Metabolism and Tuberculosis A V Pisani Chicago—p 711  
Hetero-Allergy in Tuberculosis Tissue Reaction of Tuberculous Animals to Pathogenic Micro-Organisms J Weissfeiler U S S R—p 719  
Glycerol Free Medium for Tubercle Bacillus R R Henley Washington D C—p 724

**Abdominal Compression in Pulmonary Tuberculosis**—Gordon discusses the changes in the lungs of 129 patients with essentially a bilateral fibroid type of tuberculosis who wore special abdominal supports for from three to eighteen months. Treatment of the lungs by collapse therapy either was not indicated or had been unsuccessful. The supports were worn day and night except in extreme malnutrition when they were removed for short periods. Compression was discontinued in certain cases for from three to five weeks to determine whether retrogression or progression occurred independently of treatment. Symptomatic relief from dyspnea and difficult expectoration was the rule. Attacks of paroxysmal tachycardia were controlled in two patients. Gastro-intestinal symptoms improved in nine instances, seven gained in strength and generally felt better. Roentgenograms showed improvement in the pulmonary lesions of thirty nine patients as evidenced by a decrease in the size of cavities or their disappearance and retrogression of the associated lesions. The supports were removed in three patients, an increase of cough followed and in about four weeks the cavities returned to their former size. The supports were reapplied and the cavities diminished in about five weeks. Two typical cavities which developed during the course of artificial pneumothorax treatments closed after the lung re-expanded and following abdominal compression. Twelve other patients showed at first a decrease in the size of their cavities, then more or less stationary dimensions, eight improved sufficiently for artificial pneumothorax to be employed safely and effectively.

Twenty-six patients who showed no structural improvement in the lungs were able to exercise without untoward effects. They seemed to carry their lesions safely. The greatest symptomatic relief and improvement in the lungs occurred in the patients with the well developed abdomen and abdominal type of breathing. The unsatisfactory results, such as elevation of the temperature with increased cough and dyspnea, were noted in those with acute extensions or with soft caseating lesions and marked fibrosis. Six patients were unable to wear the supports because of gastro-intestinal manifestations or of malnutrition. While abdominal compression is not intended as a substitute for rest, diet and the recognized forms of collapse treatment, it seems reasonable to suggest its use for the chronic forms of pulmonary tuberculosis, especially in bilateral involvement, and if coughing, expectoration and dyspnea are disturbing manifestations.

**Nontuberculous Pulmonary Disease**—Nissler and his associates relate the histories of three children who gave positive tuberculin reactions. The roentgen studies suggested tuberculosis. The history of long standing involvement, from two to seven years or more, with little or no appreciable changes ruled out epituberculosis, for in the latter the duration is only a few months. The three cases have been repeatedly negative for tubercle bacilli in smears from the sputum, guinea-pig inoculations have been negative, and culture studies have been negative in two cases. The sputum cultures were obtained by bronchoscopy. Two patients had cavitation over a period of years of clinical observations and roentgen studies and there has been no spread to the other lung. The general impression is that primary infection, whether severe or not resolved, disappears or shows inconspicuous calcified areas whereas in secondary infection the mortality rate is high, the lesions tend to spread and cavitate, the prognosis is grave and death not infrequently results. Their three cases have been contrary to all such observations as those of primary and (adult type) secondary infection of tuberculosis, and the authors are of the opinion that the lesions in the chests in the three reported cases are nontuberculous.

#### Annals of Surgery, Philadelphia

102 961 1128 (Dec) 1935

- Respiratory Physiology in Thoracic Surgery C A McIntosh Montreal—p 961  
Surgery for Cervical Rib R H Patterson New York—p 972  
\*Posterior Drainage in Suppurative Pericarditis R I Moore New York—p 980  
Primary Carcinoma of Bronchus Treated Successfully with Surgical Diathermy H J Moersch and H H Dowling Rochester Minn—p 989  
Carcinoma Following Gastric and Duodenal Ulcer P A Sauer New York—p 995  
\*Jejunal Ulcer E S Judd and M T Hoerner Rochester Minn—p 1003  
Carcinoma of Jejunum Report of Three Cases R F Carter New York—p 1019  
The Surgical Diabetic Five Year Survey C M Levin and F N Dealy Jamaica N Y—p 1029  
Intestinal Obstruction Evaluation of Roentgen Diagnosis H A Rendich and H S Abrams Brooklyn—p 1040  
\*Problem of Nontalculous Ureteropelvic Obstruction A Harris Brooklyn—p 1050  
Treatment of Compound Fractures with Especial Reference to the Orr Method D B Pfeiffer and C N Smyth Jr Philadelphia—p 1059

**Posterior Drainage in Suppurative Pericarditis**—Moore recommends a left sided posterior approach to the pericardium as the procedure of choice for drainage of suppurative pericarditis when the pericardial infection follows a left sided empyema. The case of a boy aged 12 who recovered after the establishment of drainage by this route is presented, including a detailed description of the history and physical signs, operative procedure and postoperative course. The author does not believe that recovery is to be attributed solely to the site that was elected for drainage. When the boy came under his care he had recovered completely from pneumonia, the empyema cavity was closed and the general state of nutrition was good. These advantages plus the additional fact that residual exudate accumulated posteriorly in the oblique sinus (cul-de-sac) in spite of the posterior incision make it impossible to evaluate exactly the part played by the posterior incision in the recovery of the patient. When the exudate became thick and it was discovered puddling in the oblique sinus behind the left atrium the advantages to be gained from an antiseptic solvent agent seemed to be of paramount importance and consequently dilute solution

of sodium hypochlorite was substituted for physiologic solution of sodium chloride, which had been used up to this time. The solution accomplished its purpose, for the residual exudate disappeared rapidly after its use was begun. However, it may be too early to conclude that it did not have a harmful effect. The syndrome produced by the intrapericardial pressure presented all the typical signs of this condition. Although there was interference with the entrance of blood into the right side of the heart, 500 cc. of whole blood was added to the circulation. This was done because the boy was anemic and septic. The result was a near fatality. The experience demonstrates that an ability to recognize and interpret the signs of intrapericardial pressure is just as important from the standpoint of therapy as it is from the standpoint of diagnosis. Intravenous therapy should be cautiously withheld in these cases, and, if it is resorted to, fluid should be injected slowly and in small amounts.

**Jejunal Ulcer**—Judd and Hoerner state that satisfactory results are usually obtained in cases in which the proper operation has been performed for chronic gastric and duodenal ulcer. There is considerable variation in the statistics regarding the results of surgical treatment. This is the outcome of having no standard by which the judgment and skill of the different individuals can be measured. Occasionally, failure to obtain complete relief following operation on the stomach or duodenum may be due purely to functional disorders. However, before such a conclusion is justified, the possibility of mechanical or organic factors must be entirely eliminated. When jejunal ulcer is known to exist, any one who persists in treating the lesion by medical management for a prolonged period assumes a great responsibility in view of the complications that may develop. The results of treatment of the 597 patients comprising the authors' study illustrate the value of surgical measures in cases of jejunal ulcer, for secondary procedures were required in only 6 per cent of the traced cases. The development of a jejunal ulcer suggests that the patient probably will not show a greater degree of toleration to another anastomosis between the stomach and the jejunum; therefore a radical change in the gastro-intestinal relationship is indicated and, when this is established, it must maintain the normal continuity as nearly as possible. The first operation of Billroth offers the ideal solution to the problem. It may be difficult to perform in some cases in which a considerable portion of the stomach has been removed at the primary operation, however if the procedure can be employed, the continuity of the gastro-intestinal tract will be established in a better way than it would be by a Pólya operation. The incidence of jejunal ulcer following gastro-jejunostomy for duodenal ulcer is about 28 per cent.

**Noncalculous Ureteropelvic Obstruction.**—Harris believes that the following fundamental principles of technic in all plastic operations on the pelvis assure greater safety and hope of success: 1. Following operation, a number 6 or 8 F ureteral catheter or bougie should be passed down the ureter, brought out through the kidney and upper angle of the wound (Peck method) and left in position for from five to seven days. 2. In anastomotic procedures the pelvis should be drained through a nephrotomy wound by a 14 or 16 F catheter for a period of five or more days. Nephrostomy is as logical in this instance as cystostomy for plastic operations on the urethra. This eliminates the effect of increased intrarenal pressure and stasis on the kidney and the suture line and meets the factor of associated infection. 3. End-to-end ureteropelvic anastomosis offers a better outlook than other methods of partial plastic repair of the outlet and is preferable to insertion of the severed ureter stump into the cavity of the pelvis. 4. The perirenal space should also be adequately drained for at least a week after operation. It is to be hoped that plastic surgery of the pelvis will prove to be more practical and useful and that errors and pitfalls may be overcome to the end that many kidneys may be saved. It would seem advantageous to have some clearing house or reference bureau to record data of all plastic work done by various operators in America, this to include continued follow-up information. Further experimental work along the line of that of Iselin appears necessary. Four histories of recent cases illustrative of conservative operative procedures which have resulted in complete relief of symptoms and conservation of a normally functioning kidney are cited.

## Archives of Dermatology and Syphilology, Chicago

32 837 998 (Dec.) 1935

- \*Pustular Bacterids of Hands and Feet G C Andrews and G F Machacek New York.—p 837
- Mapharsen (Arsenoxide) in Therapy of Experimental Syphilis and Trypanosomiasis O M Gruhitz with assistance of W D Lindsay G Hendricks and M C Dodd Detroit.—p 848
- \*Mapharsen in Treatment of Syphilis Preliminary Report. O H Foerster R L McIntosh L M Wieder, H R Foerster and G A Cooper, Madison, Wis.—p 868
- I Effect of Variation of Ratios of Dextrose to Peptone on Colonies of Certain Pathogenic Fungi J W Williams Cambridge Mass.—p 893
- LXXI Unusual Phenolphthalein Eruption Report of Case. R. S. Weiss and R L Kile St. Louis.—p 915

**Pustular Bacterids of Hands and Feet**—Examination of their patients for focal infections, suggested by the blood counts, revealed many obvious foci to Andrews and Machacek. These were located chiefly in the tonsils but also in abscessed teeth. Conditions such as duodenal ulcer, chronic colitis and arthritis were of frequent occurrence. Of a total of twenty-four patients, nine have been entirely cured by tonsillectomy. In three other cases, reported by Barber, there was rapid improvement after tonsillectomy, and the only remains of the cutaneous condition were slight traces of scaldiness, which caused no inconvenience. In one of the authors' patients, in whom there was some doubt as to the relationship of the tonsils to the cutaneous condition, suction of the tonsils was carried out repeatedly. After each treatment by suction the cutaneous eruption improved. When suction was not performed, the eruption grew worse. Finally the tonsils were removed, and within two weeks there was a complete cure, which has lasted nearly two years. Certain facts regarding their cases of recalcitrant pustular eruptions of the palms and soles have been established: (1) the presence of cutaneous lesions that have a proved relationship to a focus of infection, (2) positive allergic cutaneous reactions to streptococcus and staphylococcus toxins or to nucleoproteins, (3) consistently sterile cultures from the cutaneous lesions, (4) cure of the lesions by removal of the focus of infection and (5) a uniform histopathologic picture similar to that of trichophytids. With the evidence of these characteristics, the analogy of the condition to tuberculids and dermatophytids suggested the designation of bacterids as suitable and comprehensive. These pustular bacterids may resemble dermatophytosis, and the condition is often erroneously diagnosed and treated as such. In their differentiation it should be remembered that dermatophytosis chiefly affects the digits and the webs, whereas these parts are usually unaffected in cases of pustular bacterids. Fungi are not present in lesions of the latter condition.

**Mapharsen in Treatment of Syphilis**—In eighteen months, Foerster and his collaborators gave 233 syphilitic persons 4,666 intravenous injections of meta-amino-para-hydroxyphenylarsine oxide (mapharsen). Included in this group were forty-one patients (given 133 injections) with nonsyphilitic conditions (psoriasis, lichen planus, Vincent's infection, hemorrhagic sarcoma of Kaposi, rat bite fever and other disorders) and those on whom studies on the excretion of arsenic were carried out. Evidence of the pharmacologic action of the drug was shown promptly in all visible lesions. Spirochetes in open lesions disappeared on the average within twenty-four hours. Healing of visible lesions was rapid and was equal to that obtained with arsphenamine. The Wassermann reaction of the blood serum was reversed to negative in nearly all the cases of early syphilis. Return to a positive reaction occurred in one-half the cases and was found to be associated in five cases with abnormal conditions in the spinal fluid. Clinical relapse and return to positive serologic signs were observed most often after irregular or short periods of therapy during the first half year with long lapses in treatment. Nitritoid reactions did not occur. The immediate toxic reactions were chiefly mild gastro-intestinal disturbances. The drug (initial dose of 25 mg) was well tolerated by nearly all the patients in properly adjusted doses. An increase in the amount of the drug to as high as 60 mg for each injection was well tolerated by most patients, even when given twice a week, after initial smaller doses. Jaundice developed in four cases, and accentuation of renal impairment was observed in four others. Mapharsen is a potent antisyphilitic agent and possesses special properties that justify an extensive study of this drug for a period of years.



# Archives of Neurology and Psychiatry, Chicago

34 1133 1356 (Dec.) 1935

- Electro-Encephalogram in Epilepsy and in Conditions of Impaired Consciousness F A Gibbs H Davis and W G Lennox Boston —p 1133
- Relation Between Binet Mental Age and Motor Chronaxia. G Kreezer and Katherine P Bradway Vineland N J —p 1149
- \*Classification of School Children by Means of Handwriting Speed Factor C. Quinan San Francisco —p 1172
- Cerebrospinal Fluid in Cases of Tumors of the Brain H H Merritt Boston —p 1175
- Pathways for Pupillary Constriction Location of Synapses in Path for Pupillary Light Reflex and of Constrictor Fibers of Cortical Origin W K Hare H W Magoun and S W Ranson Chicago —p 1188
- Fibers of Pupillary Reflex and Argyll Robertson Pupil W Harris London England —p 1195
- Spontaneous Pain and Other Subjective Sensory Disturbances Clinico-pathologic Study C Davison and W Schick New York —p 1204
- Effects of Total Removal of Cerebral Cortex F A Mettler Cecilia C Mettler Augusta Ga and E Culler Urbana, Ill with assistance of E Gorden and S Eppstein —p 1238
- Mesencephalic Glioma Clinical and Pathologic Analysis of Ten Cases B J Alpers Philadelphia and J W Watts Washington D C —p 1250
- Ruptured Cerebral Varices L L Tureen S H Gray and P Wheeler St Louis —p 1274
- \*Multiple Sclerosis Effect of Typhoid Vaccine and of Epinephrine on Coagulation of Blood B Simon and P Solomon Boston —p 1286

**Classification of School Children by Handwriting Speed Factor**—Quinan describes the results obtained in timed experiments in writing made with 100 orphan girls from 8 to 17 years of age. The mean speed values noted from the second year of grammar school to the third year of high school diminished by steplike degrees from 232 seconds to forty-three seconds. The mean value for adults, 48.6 seconds, was reached only by the high school pupils and as a rule girls from 15 to 17 years of age. The grade values tended to form an inverse sequence, this circumstance suggested the existence of a correlation between the factors of handwriting speed and intelligence.

**Mesencephalic Glioma**—In reviewing the syndromes associated with tumors of the mesencephalon, Alpers and Watts noted that there is no constellation of signs and symptoms which can be said to be present in all cases of tumor in this region undoubtedly owing to the many structures in this portion of the brain, the clinical features of the case depending on the number of structures invaded and the degree of their involvement. Generally speaking, there are two groups of cases (1) glioma involving the tectum mesencephali and (2) glioma involving the tectum tegmentum and basis mesencephali. Despite the rather wide variation in the clinical pictures encountered in cases of mesencephalic glioma, it is possible to draw some practical conclusions. First, it is certain that the diagnosis of a tumor involving the tectum mesencephali is most uncertain clinically and depends in the last analysis on injection of air. In cases of more extensive glioma involving the tectum and tegmentum or the tectum tegmentum and basis mesencephali, there is a combination of signs of involvement of cranial nerves (chiefly oculomotor) and of the cerebellum and motor and sensory disturbances. Occasionally a syndrome simulating that of occlusion of the superior cerebellar artery is encountered. Choked disk may be present, though almost as frequently it is absent, and subjective signs of increased pressure are often pronounced. In rare instances a pupil simulating the Argyll Robertson pupil may be encountered. It should be emphasized, however, that the pupillary reactions are not those of the typical Argyll Robertson pupil for there is loss of response both to light and in accommodation and sometimes even to consensual stimulation. The course in these cases is steadily downward despite operative intervention. The removal of the tumor is impossible, for it would necessitate removal of most of the brain stem at the involved level.

**Multiple Sclerosis**—Simon and Solomon studied the clotting time of the blood in twelve patients with multiple sclerosis and in fourteen control patients with reference to the changes produced by the intravenous injection of typhoid vaccine and by the subcutaneous injection of epinephrine. The results suggest that there may be an abnormality in the coagulation of the blood in some patients with multiple sclerosis. This abnormality apparently consists in an increased lability of the clotting time as a result of which such influences as typhoid vaccine and epinephrine produce more marked and more pro-

longed changes than in control patients. Such an abnormality would make clearly for an increased tendency toward intravascular clotting and would lend support to Putnam's observations on the pathology of the disease. The various factors associated with the onset or exacerbation of the symptoms of multiple sclerosis are known to be associated also with either an increased rapidity of coagulation of the blood or an increased secretion of epinephrine, which in turn causes increased rapidity of coagulation. Further work is now in progress involving the study of the blood platelets and chemical analysis of the blood with especial reference to the elements entering into coagulation.

## Arkansas Medical Society Journal, Fort Smith

32 107 118 (Dec.) 1935

- Use and Abuse of Digitalis A G Sullivan Hot Springs National Park —p 107
- Band's Ring E H White Little Rock —p 109

## Indiana State Medical Assn. Journal, Indianapolis

28 639 704 (Dec 1) 1935

- Cesarean Section N F Miller Ann Arbor Mich —p 639
- The Practical Management of Cardiovascular Emergencies E. F. Horne Louisville Ky —p 642
- Problems of Senile Cataract S R Clifford Chicago —p 647
- Inhalation Anesthesia Newer Developments R M Waters Madison Wis —p 650
- Recognition and Treatment of Bowel Obstruction W D Gatch Indianapolis —p 655
- Bladder Tumor C J Cooney Fort Wayne —p 658
- \*Improved Hypnotic and Sedative Due to Synergistic Action of Calcium with Phenobarbital Preliminary Report C C Robinson East Chicago —p 662
- Acute Mercurial Poisoning Treated by Use of Sodium Thiosulfate Case Report H N Middleton Indianapolis —p 662

**Improved Sedative Due to Synergistic Action of Calcium with Phenobarbital**—Robinson divided forty consecutive traumatic cases in which hypnosis or sedation were required into two groups. Every other patient was given 1½ grains (0.1 Gm) of phenobarbital and 5 grains (0.3 Gm) of acetylsalicylic acid. The alternate patients were given the same combination with the addition of 2 grains (0.13 Gm) of calcium phosphate. The combination that included calcium phosphate exerted an earlier and more uniform action as compared with the combination of phenobarbital and acetylsalicylic acid when given alone. There was little difference in the cases in which large and small doses of calcium phosphate (ranging from 0.13 to 0.65 Gm) were used. Equally favorable results were obtained with dicalcium phosphate, which has practically no action on the alkalinity of the intestine as compared with tricalcium phosphate which is antacid. In view of this it seems preferable to use dicalcium phosphate instead of tricalcium phosphate in order to avoid any possible decomposition of the acetylsalicylic acid.

## Journal of Experimental Medicine, New York

62 733 874 (Dec 1) 1935

- \*Serologic Evidence of Immunity with Coexisting Sensitization in Type of Human Allergy (Hay Fever) R A Cooke, J H Barnard S Hebbald and A Stull New York —p 733
- Cellular Reactions to Waxlike Materials from Acid Fast Bacteria Unresponsive Fraction from Tubercle Bacillus Strain H 37 F R Sabin A C Smithburn and R M Thomas New York —p 751
- Cellular Reactions to Waxes from Mycobacterium Leprae Florence R Sabin A C Smithburn and R M Thomas New York —p 771
- Effects of Nasally Instilled Virus of Poliomyelitis on Cerebrospinal Fluid and Blood of Monkeys S Flexner New York —p 787
- Further Studies on Submaxillary Gland Viruses of Rats and Guinea Pigs Ann G Knittler and T TUNG Peiping China —p 805
- Distribution of Swine Influenza Virus in Swine Marion L Orcutt and R E Shope Princeton N J —p 823
- Experimental Studies on Encephalitis IV Specific Inactivation of Virus by Serums from Persons Exposed to Encephalitis St Louis Type 1933 L T Webster G L Fite and Anna D Clow with Evaluation of Results of Mouse Tests of Serums by H Muench New York —p 827
- Emigration of Pneumococci Type III from Blood into Thoracic Duct Lymph of Rabbit and Survival of These Organisms in Lymph Following Intravenous Injection of Specific Antiserum C F Brinker J F Entlers M F Shaffer and Octa C Leigh Boston —p 849

**Serologic Evidence of Immunity**—Using ragweed hay fever as the representative of a certain type of allergy Cooke and his associates investigated the mechanism of the protection afforded by specific injections thus far established only by

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Ophthalmology, London

19: 641 704 (Dec.) 1935

- Congenital Retinal Fold. Ida Mann—p. 641  
A Tick on the Upper Eyelid. E. O. Kirwan—p. 659  
Red Multiple Maddox Rod with Prism. C. Berens—p. 661  
Phospholipid Content of Cataractous Human Lenses. P. W. Salt—p. 663  
Recurrent Vision with Moving Stimulus of Alternating Intensity. F. L. Warburton—p. 672

## Glasgow Medical Journal

6: 225 264 (Nov.) 1935

- Some Recollections on Asthma with a Few Suggestions as to Its Treatment in Childhood. W. D. Allan—p. 225

## Journal of Physiology, London

85: 277 420 (Nov. 22) 1935

- Muscular Force at Different Speeds of Shortening. W. O. Fenn and B. S. Marsh—p. 277  
Chemical Transmitter of Sympathetic Nerve to Uterus. M. A. F. Sherif—p. 298  
Response of Chemical Receptors of Carotid Sinus to Tension of Carbon Dioxide in Arterial Blood in Cat. A. Samaan and G. Stella—p. 309  
Estimation of Estrin and of Male Hormone in Oily Solution. Edith Bnlbring and J. H. Burn—p. 320  
Action of Adrenalin on Respiratory Quotient. E. M. Bridge and H. R. Noltie—p. 334  
Effect of Choline on Weights of Young Rats. E. W. McHenry—p. 343  
Response of Vagotomized Animals to Respiratory Resistance. M. Tutao—p. 350  
Choline and Liver Respiration. O. A. Trowell—p. 356  
\*Blood Flow Through Skeletal Muscle in Relation to Its Contraction. G. V. Anrep and E. von Saalfeld—p. 375  
Alleged Occurrence of Krampfstoffe in Acetone Extracts of Mamalian Brain. E. Holmes—p. 400  
Appearance of Histamine in Venous Blood During Muscular Contraction. G. V. Anrep and G. S. Barsoum—p. 409

**Blood Flow Through Skeletal Muscle**—Anrep and von Saalfeld observed that a comparison of the venous outflow and of the arterial inflow of blood into a contracting skeletal muscle shows that muscular contraction is accompanied by a compression of the intramuscular blood vessels. The suggestion made by Rein that the blood vessels of a muscle present a diminished resistance to the blood flow during contraction cannot be confirmed. The compression of the blood vessels by the contracting muscle depends on the strength of its contraction and not on the character of its contraction—*isometric* or *isotonic*. The vasodilatation following the contraction also depends on its strength, that is, on the number of muscle fibers participating in the contraction. Potent vasodilator substances appear in the venous blood emerging from a contracting muscle. These substances are stable in blood at least up to half an hour. A most conspicuous hyperemia is observed when the venous blood collected during activity of the muscle is reperused through it. The theory of Rein that the vasodilator substances are not released from the muscle fibers until the moment of their relaxation finds no support in the authors' experiments. The vasodilator substances are produced and released from the muscle during its contraction. The liberation of these substances continues for some time following the relaxation how far their production also outlasts the period of contraction cannot as yet be ascertained. Indirect evidence indicates that the vasodilatation following muscular contraction is not directly due to changes in the gaseous content of the blood.

## Lancet, London

2: 1101 1154 (Nov. 16) 1935

- Pharmacologic Aspect of Digitalis Therapy. A. Fraenkel—p. 1101  
Obstetric Practice of the Future. M. H. Phillips—p. 1107  
Cyclopropane Anesthesia. Report Based on Two Hundred and Fifty Cases. S. Rowbotham in a session with Aileen Chester. R. Jarman. G. R. Phillips and T. B. Vaile—p. 1110  
\*Whooping Cough. Diagnostic Significance of Blood Counts. N. D. Begg and Margaret F. Coveney—p. 1113  
\*Resection for Carcinoma of Sigmoid and Sigmoid Rectum. D. P. MacGuire—p. 1114

**Blood Counts in Whooping Cough**—Begg and Coveney discuss the blood count observations in sixty-five cases of whooping cough. Most of these were in the late paroxysmal

or early whooping stage of the disease and ages ranged from 3 months to 9 years. Blood counts, which consisted of a total and differential leukocyte count, were performed at two stages in the disease—on admission and in early convalescence. The figures obtained were then compared with Still's table and the results expressed as plus or minus normal for the particular age group. An absolute increase in the number of leukocytes was present in every case, increases amounting to more than 30,000 were occasionally obtained. On an average, each case was shown to have 10,064 leukocytes more than was normal for the age. Lymphocytosis characterized some 77 per cent of cases, and in 35 per cent this change was marked. On the other hand, as many as 23 per cent showed no increase at all. In the age group of less than 6 months only 17 per cent of children showed a marked lymphocyte increase and no less than 33 per cent showed no increase. No other significant difference between the various age groups was detected. By the fourteenth day of the whooping stage, the leukocyte count had returned to physiologic limits. This was equally true whether the initial lymphocytosis had been marked, moderate or mild.

**Resection for Carcinoma of Sigmoid**—MacGuire feels that the most aseptic method for the removal of carcinoma of the sigmoid and sigmoid rectum is the following. In the first stages the cecum is withdrawn through a McBurney incision and anchored there for forty-eight hours. This can be done by applying a clamp to the mesentery of the appendix or suturing the parietal peritoneum to the mesentery, care being taken that at no time is a needle inserted in the colon proper for fear of infection. A Paul tube is then introduced after forty-eight hours and a suction apparatus of the Wangenstein type is connected. Up to 5,000 cc. of a 5 per cent solution of dextrose and physiologic solution of sodium chloride is given by intravenous injection and also by clysis during the first few days. Blood transfusions are ordered as the need arises. When the condition of the patient warrants it, he is sent home for a rest of two months before the radical abdominoperineal operation is performed. On return to the hospital, a complete check-up is made. The administrations of transfusions, dextrose and sodium chloride solution, and also the application of an indwelling catheter are ordered. A median or left incision is now made and the mesentery of the left colon is resected from a point above the growth down through the peritoneal reflection the gland bearing area being excised. The abdomen is closed temporarily and the patient is placed in the lithotomy position for perineal resection. The anal areas are painted with iodine, and gauze soaked in iodine is introduced into the rectum. The aperture is then closed with a continuous suture so that more iodoform gauze can be applied to the lower segment and this, in turn, is enveloped in a sterile rubber glove. The perineal incision is made preferably with a cautery and continued until sufficient rectum extrudes. A second sterile glove completely envelops the lower intestinal segment. After dissection up to the peritoneal reflection, the abdomen is reentered, the peritoneal reflection is dissected and the entire loop is drawn upward into the abdominal cavity. It is then carried through a separate incision made through the left rectus muscle for the purpose of fashioning a single-barrel colostomy. The peritoneal reflection is closed, the cut edges of the sigmoid mesentery are sutured to the left parietal peritoneum to prevent herniation, and the incision in the abdomen is also closed in the usual manner. The extraneous intestine is double clamped a few inches from the colostomy opening and severed with a cautery. Postoperatively the patients are made comfortable by the use of morphine, and 4,500 cc. of the dextrose and sodium chloride solution is given by hypodermic clysis or intravenously for the first few days. An indwelling catheter is used and irrigations of boric acid are given for at least one week after operation. Repeated blood transfusions are given as indicated by the condition of the patient.

## South African Medical Journal, Cape Town

9: 777 816 (Nov. 23) 1935

- Our Land Is Our Population Satisfactory? Climate and Clothing in South Africa. G. A. P. Ross—p. 779  
Id. Climate in South Africa. H. P. Smit—p. 782  
Hemophilia. S. Zavadier—p. 789  
The Blindness of John Milton. D. J. Wood—p. 791

## Bruxelles-Médical, Brussels

16: 114-148 (Nov 24) 1935

- Action of Foods on Endocrine Sympathetic System. N Pende—p 114  
What is Best Treatment of Acute Gonorrhea? E Tant—p 118  
\*Cutaneous Staphylococcal Infections and Their Treatment by Copper Sulfate J Hannecart—p 121  
Is Forced Labor a Lost Procedure? P Pastiels—p 126

**Treatment of Cutaneous Staphylococcal Infections**—Staphylococci, according to Hannecart, have a marked predilection for the pilosebaceous follicles because of their relatively constant temperature, moisture and richness in organic debris. Since infections of these regions with staphylococci have a tendency to spontaneous recovery, treatment is difficult to evaluate. There are cases, however, that do not heal spontaneously and are resistant to the usual forms of therapy. For this group the author has employed copper sulfate administered intravenously in a 0.5 per cent solution orally in keratinized 0.02 Gm pills, and locally in a 1 to 10,000 lotion and in ointments composed of one part of copper to two parts of camphor and ninety-seven of simple base. The intravenous injection of one ampule (10 cc) is made daily until improvement is marked. Thereafter it is given every other day. In children aged from 8 to 10, only 5 cc. is given. The usual result of treatment is a rapid diminution of pain and an active disappearance of the core. In general, ten days is enough to produce convalescence in furunculosis that has been resistant to all other treatments. It does not, however, always prevent recurrences, although when these occur a few further days of treatment is usually sufficient. The mode of action is not clear. The copper is eliminated largely in the bile. The results are particularly good with isolated furuncles and often gratifying in generalized furunculosis, furuncles of the auditory canal and anthrax. In acne, good results have not been obtained.

## Gynécologie, Paris

34 601 664 (Oct) 1935

- Periodic Infertility of Woman G Cotte—p 601  
Studies of Action of Some Hormones on Plants G Cotte P Manceau and Claire Meyer—p 612  
Anogenital Pruritus Resistant to Surgical Treatment Three Cases G Cotte and J Gatte—p 624  
\*Treatment of Chronic Cervical Metritis by Electrocoagulation G Cotte—p 630  
\*Preventive Treatment of Phlebitis of Legs in Gynecologic Operations G Cotte and N Boulez—p 634  
Diffuse Endometriosis of Uterine Body G Cotte—p 639  
Recurrence in Uterine Body of Cervical Neoplasm Treated with Radium Three Years Previously G Cotte and R Sprecher—p 643

**Treatment of Cervical Metritis by Electrocoagulation**—Cotte states that he has employed this method of treatment for ten years. The technic varied according to the case. In exocervicitis with erosion it was necessary to insert the needle only 2 or 3 mm past the cervix. Following the treatment, mercurochrome was used and the patient treated again if necessary, in three or four weeks. In endocervicitis the technic is more difficult. He used a small intracervical fenestrated speculum. The cervix was fixed and the speculum introduced and turned so that fulguration of each involved area could be performed. In light cases one session was usually enough but in severe ones more were necessary. He has never observed the slightest accident or complication from these treatments. The results have been excellent. Thus of the thirty-six patients so treated in 1932 all of whom recovered seven had one pregnancy and two had two pregnancies subsequent to the treatment.

**Prevention of Phlebitis in Gynecologic Operations**—Since phlebitis involving the saphenous veins is the most common complication of gynecologic operations Cotte and Boulez discuss the possibilities of preliminary preventive treatment. In two cases they practiced surgical section of the saphenous vein at its upper anastomosis and at the same time injected from 20 to 30 cc. of a 30 per cent solution of sodium salicylate at its peripheral end. In these two cases the results were excellent and no postoperative phlebitis occurred. While it is impossible to say that phlebitis would have occurred if this procedure had not been performed the preliminary operation is simple and may help in avoiding this painful complication especially in persons with deficient circulation.

## Schweizerische medizinische Wochenschrift, Basel

65 1157 1196 (Dec. 7) 1935 Partial Index

- Scientific Foundation of Götter Prophylaxis F de Quervain—p 1157  
Arrangement of Digitalis Treatments L Krehl—p 1161  
Biochemical Affinity of Cardiac Glycosides for Cardiac Muscle E Rothlin—p 1162  
Prophylactic Treatment of Arterial Atheroma C I Parhon and J Ornstein—p 1164  
\*Percutaneous Administration of Estrogenic Substance B Zondek—p 1168  
\*Some Observations on Possibility of Influencing Psoriasis by Cevitamic Acid W Lutz—p 1169

**Percutaneous Administration of Estrogenic Substance**—Zondek shows that estrogenic substance is active not only in subcutaneous, oral and rectal administration but also when given percutaneously. In experiments on male guinea-pigs he found that the region of the mammary gland is especially susceptible to estrogenic substance, for embrocation with ointment resulted in enlargement of the mammary gland of male animals in a comparatively short time, and continuation of the embrocations even elicited lactation. Another typical reaction was hyperpigmentation of the mammary areola, corresponding in intensity to that of the pregnant female animal. Moreover, the percutaneous administration also exerted an antimasculine effect, in that the testes decreased in size. In view of the fact that estrogenic substance is absorbed by the skin and that in the case of some organs, such as the mammary glands, it is more effective than the subcutaneous administration, the author decided to try the percutaneous administration in disorders such as pruritus vulvae senilis. In six cases refractory to other methods of treatment the itching areas were massaged twice daily with an estrogenic ointment and favorable results were obtained in five cases. The author tried the percutaneous treatment also in acne vulgaris of young girls and of menopausal women. He concedes that not all cases responded to this treatment but says that it proved surprisingly effective in some refractory cases. He applied the ointment to the face of these patients, at first once and later twice a day. He suggests that the ointment might also be tried in articular disorders in which hormones play a part.

**Cevitamic Acid in Psoriasis**—Lutz points out that it becomes more and more evident that psoriasis is a metabolic problem and that it can be influenced by way of the metabolism. He reports three cases of psoriasis vulgaris in which he obtained favorable results with the oral administration of cevitic acid. The acid was given in the form of tablets, each containing 0.05 Gm, and in the form of powders, each containing 0.25 Gm of cevitic acid. The daily doses varied in one case it was gradually increased to three tablets four times a day. In addition to the three cases in which the cevitic acid proved effective, the author observed a number of cases in which the treatment was of slight or no effect. However, these patients received only ambulatory treatment, and he thinks that the medication might not have been sufficiently regular to achieve its object; moreover, he admits that in view of the complex etiology of psoriasis it cannot be expected that all cases respond to this treatment. Even in the three patients who at first responded favorably to the treatment the results were not lasting. He reaches the conclusion that cevitic acid is not the method of choice in the treatment of psoriasis but thinks that the possibility of influencing some cases justifies further therapeutic trials.

## Tuberculosis, Rome

27 351 390 (Oct) 1935

- \*Treatment of Tuberculous Empyema by Double Gold and Sodium Thiosulfate by Intrapleural Route L Rocas—p 351

**Treatment of Tuberculous Empyema**—In the treatment of tuberculous empyema Rocas advises intrapleural injections of double gold and sodium thiosulfate starting with 0.05 Gm dissolved in 10 cc. of distilled water and increasing the dose 0.05 Gm per injection until 0.3 Gm per injection is administered. The injections are given at intervals of four five or eight days according to the rate of clarification of the pleural fluid and the tolerance of the patient to the treatment. Fever appears in some cases and lasts for one or two days. No severe reactions follow the treatment. Doses of 0.5 or 0.6 Gm of double gold and sodium thiosulfate per injection makes the

vigilance of the patient necessary, especially for the possible appearance of eosinophilia or urinary disturbances as complications. The treatment is of complementary value to intrapleural lavage. Its results are better in pure tuberculous pyopneumothorax than when associated with other bacteria. In the latter cases a combined treatment of intrapleural injections of vaccines and of double gold and sodium thiosulfate gives satisfactory results and the improvement of the patients is more effective and rapid than that obtained by intrapleural lavage alone. The character of the pleural fluid is favorably modified by the second or the third month of the treatment. In some cases sclerosis of the tuberculous pulmonary foci is rapidly produced. This fact seems to indicate a possible action of the gold treatment as complementary to an insufficient artificial pneumothorax. Satisfactory results from the treatment are reported by the author in nine cases of tuberculous pyopneumothorax complicating artificial pneumothorax. In his cases he used either a chlorophyll preparation (chlorosan) or physiologic solution of sodium chloride as liquid for the lavage. Lavage was stopped at each treatment as soon as the returning liquid was clear and discontinued altogether as soon as the character of the pleural fluid was favorably modified. In the latter case the last part of the treatment consisted only of a few more injections of double gold and sodium thiosulfate.

### Prensa Medica Argentina, Buenos Aires

22: 2293-2340 (Nov. 27) 1935 Partial Index

- Parathyroprival Tetany Epilepsy Case J. J. Beretervide C. F. Cárrega Casaffouth and S. Rosenblatt.—p. 2293
- Biopsy Its Technic and Indications D. Brachetto Brian.—p. 2297
- \*Frequency Clinical Forms and Diagnosis of Hyperthyroid Diarrhea A. Richieri.—p. 2317
- Stercoroma J. L. A. Mulcahy.—p. 2327
- Cutaneous Syphilis Following Trauma Case J. L. Carrera.—p. 2330

**Diarrhea of Hyperthyroid Origin.**—Richieri states that diarrhea is frequent in all forms of hyperthyroidism and may be the predominant or even the only symptom of the condition. Hyperthyroid diarrhea has a sudden onset. The number of bowel movements varies between two and three a day in the mild forms and between forty and fifty in the acute. The bowel discharges are of a paroxysmal type and sometimes painful. The feces, which are either loose or soft and have neither mucus nor blood, which proves the lack of infiltration of the intestinal mucosa, show no characteristic tendencies on microscopic examination. The diagnosis of hyperthyroidism is difficult in atypical forms in which the goiter cannot be felt, exophthalmos does not exist, tremor does not show itself or is not intense and tachycardia may be present. It is also difficult in undeveloped but impending hyperthyroidism (Pende's type of minimal hyperthyroid constitution). Lymphocytosis and the results of Lowy's epinephrine test and of other methods for the diagnosis of hyperthyroidism are of no value. A certain diagnosis may be made in these cases, however, by determining the basal metabolism, an increase of which as well as the presence of alimentary hyperglycemia points out the hyperactivity of the thyroid as the cause of diarrhea. The author reports nine cases of hyperthyroid diarrhea.

### Deutsche medizinische Wochenschrift, Leipzig

61: 1911-1950 (Nov. 29) 1935 Partial Index

- \*Two Years Clinical Experiences with Conditioned Free Diet in Treatment of Diabetes Mellitus B. W. Ercklentz.—p. 1911
- \*Insular Emaciation B. Liegner.—p. 1916
- Utilization of Hardened Fats in Human Metabolism C. Massatsch and H. Stendel.—p. 1918
- Institutional Treatment of Diabetes A. Kernen.—p. 1919
- Gout and Related Conditions H. Sauerwald.—p. 1921

**Experiences with Conditioned Free Diet in Diabetes Mellitus.**—Ercklentz reports his results with a somewhat modified form of Stoltz's "free diet." A diabetic patient who comes to the clinic while he is not in coma is given on two succeeding days 1 liter of milk and 48 Gm of carbohydrates, 35 Gm of fat and 32 Gm of protein (in all 672 calories). With this regimen the patient's condition improves rapidly; he feels better and the thirst and polyphagia are reduced. The glycosuria, hyperglycemia and acetonuria become lessened. If after the milk days the acetonuria has disappeared the patient is given no carbohydrates for a day but if this is not the case a mixed diet is instituted at once. The patient's reaction to

the milk days indicates also whether the diabetes is mild or severe and with this the later insulin requirements. If there is no great glycosuria and if the blood sugar is low, insulin can be dispensed with and a dietetic treatment may be continued. In the beginning the mixed diet consists of from 1 to 2 Gm of carbohydrates and from 1 to 15 Gm of protein per kilogram of body weight and at the most 70 Gm of fat, so that the calories total about 1,500. If the patient eliminates sugar under these conditions, he receives insulin, the quantity of which depends on the amount of sugar that he eliminates. As soon as aglycosuria has been obtained, the patient is given a conditioned free diet in which the patient's wishes, particularly his wishes for carbohydrates, are considered, whereas protein and fats are kept within the limits mentioned. The demands for carbohydrates are often considerable during this period (300 Gm and more). The urine is tested before each meal and the intended quantity of insulin is increased by 5 units if the test is strongly positive and by 2 units if it is weakly positive. If the test is negative, the insulin dosage may eventually be slightly reduced. Considerable increase in the carbohydrate intake usually necessitates a corresponding increase in the insulin dosage but, after a while, the carbohydrate hunger usually diminishes and the insulin dosage must be carefully reduced so as to avoid hypoglycemic reactions. The present requirements become the basis for the permanent treatment, which, although more or less free, must nevertheless be a dietetic one. Overfeeding should be avoided, and the patient should remain under the physician's control.

**Insular Emaciation.**—Liegner emphasizes that hypofunction of the insular apparatus of the pancreas does not always lead to diabetes. He demonstrated in animals that, if the pancreatic substance is considerably reduced, emaciation may result. Insular emaciation occurs almost exclusively in women, a fact that has not been explained. Studies convinced him that the female is more accustomed to metabolic fluctuations than is the male and that the male reacts to disturbances in the insular apparatus of the pancreas somewhat differently from the female. Since diabetes is three times as frequent in men as in women, the author thinks that it may be assumed that hypo-insulinism predisposes the man to diabetes and the woman to emaciation. He concedes that hypo-insulinism, which is not a diabetes but rather becomes manifest as an emaciation, may be accompanied by disturbances of other endocrine organs, particularly the ovaries and the hypophysis, but he insists that it is nevertheless a clearly defined disease entity. In discussing the therapy of this form of emaciation he points out that these patients are extremely sensitive to insulin. He thinks that medication should be begun with 5 units and that a single dose of 20 units should be maximal for these patients. Moreover, the small doses should not be given more than three times a day. A single insulin cure is as a rule not sufficient, but the author as well as others have gained the impression that intermittent treatment is advisable. In this manner it is possible to compensate not only the insular defect but also the other endocrine disturbances.

### Medizinische Klinik, Berlin

31: 1593-1624 (Dec. 6) 1935 Partial Index

- \*Pathogenesis Symptomatology and Glaridol Therapy of Angioneurotic Disturbances O. Klein and A. Schally.—p. 1599
- \*Results of Blood Transfusions in Malignant Diphtheria H. Seckel.—p. 1603
- \*Role of Curvature of Spine in Pathogenesis of Gastrointestinal Ulcer I. Pines.—p. 1610
- Preparation of Individuality of Mother and Child During Pregnancy O. Grosser.—p. 1611

**Angioneurotic Disturbances.**—Klein and Schally point out that the symptomatology of angioneurosis varies greatly. In some patients the disorders of the central nervous system predominate (visual disturbances, headaches, migraine, tinnitus aurium, vertigo and so on), in others the cutaneous symptoms (paresthesias, pallor, acrocyanosis) are noteworthy and still others complain of disturbances in the gastrointestinal tract. In discussing the nature of these disturbances he emphasizes the dysregulation of the blood perfusion in the region of the small vessels. The tone of these small vessels which determines their blood perfusion, is controlled by the sympathetic nervous system as well as by endocrine factors. The author reports the history of a case of angioneurosis characterized by

cutis marmorata and by transitory disturbances of the central nervous system. The spotting of the skin was the result of red and livid areas that showed a strong contrast to the surrounding pale skin. Examination with the capillary microscope revealed capillary atony. The author resorted to subcutaneous injection of solution of posterior pituitary and found that this extract counteracted not only the objective manifestations of the central nervous system and the cutis marmorata but also the subjective complaints. When the treatment with the extract was discontinued for some time the subjective and objective symptoms reappeared, but renewed treatment counteracted them again. This and the capillary atony make it probable that a deficiency of posterior pituitary hormone is at least partly responsible for the pathogenesis of the disorder, in spite of the fact that the clinical and roentgenologic examination failed to reveal anatomic changes in the hypophysis.

**Blood Transfusion in Diphtheria.**—Seckel emphasizes that blood transfusion in malignant diphtheria is an auxiliary therapeutic measure, that is it is never employed without the customary serotherapy. Immediately after admittance to the hospital, his patients were given serum by intramuscular injection and occasionally also by intravenous injection. The blood transfusions were usually given on the same day on which the main dose of serum was given. The quantity of blood varied between 300 and 400 cc., that is, approximately 15 cc for each kilogram of body weight. The blood was furnished by suitable blood relations of the patients or by professional donors belonging to blood group O. The specific antitoxin content and the diphtheria anamnesis of the donors were disregarded. The author resorted to blood transfusion only in the severe, so-called malignant cases of toxic diphtheria which are characterized by extensive coating and edema of the pharynx, disfiguring periglandular edemas along the entire neck and even on the chest, serosanguineous discharge from the nose eventually hemorrhages, and severe disturbances of the general condition with pallor, vomiting, apathy, jactitation and so on. After blood transfusions on the sixth and eighth days proved ineffective, the author resorted to transfusion only within the first five days and usually within the first four days. The results of the auxiliary blood transfusion in forty-two cases are recorded in a table. It was found that whereas the lethality of the malignant form of toxic diphtheria had before been approximately 80 per cent, it was now only about 40 per cent. The severely disturbed general condition of the patients was favorably influenced. Moreover, myocarditis was either prevented or took a much milder course, and the late fatalities resulting from respiratory paralysis were almost entirely prevented. The author considers auxiliary blood transfusion the most important progress in the treatment of diphtheria since the introduction of serotherapy.

**Rôle of Curvature of Spine in Gastroduodenal Ulcer.**—Pines says that three theories of the pathogenesis of gastroduodenal ulcers have found widest acceptance: the neurospasmogenic, the mechanic-functional and the gastric. Each of these theories will doubtless explain a certain number of cases of ulcer but he thinks that in the majority of cases all three components (nervous, mechanical and gastric) play a part with one of them predominating. He directs attention to a mechanical factor, namely, to curvatures of the spine which exert pressure on certain parts of the stomach and thereby lead to the development of ulcers. He reviews the observations of others particularly of Hitzenger who found twelve cases of round ulcer in the gastroduodenal segment in persons with an abnormal spine. The most frequent anomalies of the lower thoracic and the lumbar portions of the spine are hypernormal lordosis and left-sided scoliosis. It was found that in cases of lordosis the ulcer is usually in the pyloric part whereas in cases of left-sided scoliosis the niche is in the center of the small curvature. Since Hitzenger called attention to this in 1920 the author has observed numerous cases of ulcer in patients with considerable lordosis or with left-sided scoliosis of the lower thoracic spine. In all cases the course of the disorder was extremely slow and there never resulted a complete cure. It is noteworthy that the ulcer was localized exactly at the sites at which the apex of the convexity of the vertebral column crossed the small curvature or the pyloric part of the stomach. The author reports the clinical histories of three

patients and shows diagrams of the anatomic conditions. He points out that these clinical observations support the mechanic-functional theory of the pathogenesis of gastric ulcer.

### Monatsschrift f Geburtshilfe u Gynäkologie, Berlin

100: 297-356 (Nov.) 1935

Thoracopagus of Earliest Embryonal Development in Tubal Pregnancy. B. Ottow—p. 297

\*Pregnancy in Essential Hypertension. H. Albrecht—p. 301  
Syphilis Reaction in Capillary Blood Suited for Consultation Hour and for Care of Pregnant Women. H. Schnalm—p. 311  
Case of Successfully Operated Teratoma of Sacrum. K. Fuge—p. 317  
Blood Formation and Clinical Course of Anemias During Pregnancy. M. A. Danachi—p. 328

**Pregnancy and Essential Hypertension.**—Albrecht points out that, although it has been asserted that in women with primary hypertension pregnancy takes an uneventful course, his observations on five women convinced him that the prognosis is rather grave. The women observed by him developed a severe edemonephrotic and eclamptic syndrome during the early months of pregnancy. He points out that essential hypertension is considered a change in the tonus of the sympathetic nervous system in the form of a defective regulation of the blood pressure. It is to be expected that the great metabolic changes that take place in the pregnant organism influence the sympathetic nervous system, particularly the vasomotors, and, if essential hypertension is really a neurogenic vasoconstriction of the arterioles, it is understandable that the organism becomes severely taxed. Certain substances that develop in the course of pregnancy result in an increased vasoconstriction of the arterioles and the capillaries. The author gives the histories of the five women and shows that in all of them a tendency to edema formation developed during the early stages, the hypertension increased and renal impairments occurred that finally produced the preeclamptic syndrome or severe eclampsia. The symptoms recur with greater intensity in every subsequent pregnancy and it is therefore necessary to keep such women under careful observation and to institute the required prophylactic treatment. If necessary, the patients should be hospitalized and given a rest cure, but even if they stay at home they should rest in bed and should be carefully guarded against all excitements. The intake of meat and of sodium chloride should be restricted and even milk and cheese, on account of their high salt content. The medicinal treatment should consist of the administration of calcium, eventually together with atropine and theobromine. Glandular therapy is not advisable. If albumin appears in the urine rest in bed becomes absolutely necessary and the protein, sodium chloride and water intakes must be restricted. In case of severe edema, thirst days must be intercalated. If the preeclamptic symptoms increase in spite of these measures and if amaurosis and retinitis develop, delivery by cesarean section is indicated.

### Zeitschrift für Krebsforschung, Berlin

43: 1-86 (Nov. 18) 1935

\*Measurement of Nuclei and Counting of Chromosomes in Human Tumors. E. Scharrer—p. 1  
Nuclear Conditions in Cutaneous Carcinomas. A. Deuticke—p. 39  
Method for Testing Substances for Their Efficacy in Carcinoma. B. Lustig and H. Wachtel—p. 54  
Morphologic Structure of Tumor in Relapses of Cervical Carcinoma Following Roentgen Radium Treatment. W. W. Ossinskaja—p. 66

**Counting of Chromosomes in Human Tumors.**—Scharrer points out that an enlargement of the entire cell or of some parts of the nucleus or an increase in the number of these parts has long been considered a characteristic of the cancer cell. He reviews some of the literature on this problem and describes his own measurements on nuclei and his studies on the number of chromosomes. He measured the nuclei of normal organs, adenomas and carcinomas. In the normal human mammary gland he observed rhythmic growth of the gland lobules and especially a nuclear enlargement in the form of rhythmic growth during pregnancy and lactation and in the case of cystic fibrosis. The standard nuclear volume of adenomas in the liver, thyroid or mammary gland revealed no regular deviation from that of the matrix tissue; frequently the two were the same. Rhythmic growth was occasionally observed in adenomas and it occurs even in carcinomas. The standard nuclear volume of carcinomas was never smaller than that of the matrix tissue.



Occasionally it was of the same size as that of the matrix cells, but in most cases it was larger. The enlargement of the carcinoma cells in comparison to the matrix cells (studied on twenty-five mammary cancers) develops in two ways (1) by duplication or quadruplication of the standard nuclear volume in the form of rhythmic growth, and (2) by simple upward displacement. Often both ways contribute to the enlargement. An attempt was made to classify mammary carcinomas according to their standard nuclear volume and two groups were set apart, of which one seems to develop from the other one by rhythmic growth. Counting of the chromosomes in cancers of the human skin and of the human mammary gland revealed, in addition to diploid and tetraploid numbers, also values that lay between these extremes. The author concludes that the pathogenesis and the nature of cancer cannot be explained by the doubling of the standard nuclear volume and of the number of chromosomes. He demonstrates parallels between chromosome numbers and size of mitoses on the one hand, and variation curves of the size of the nucleus and standard nuclear volumes on the other hand, and he calls attention to the "harmony in cancer." Every cancer appears to be a special individual, the peculiarities of which must be examined. In this manner it might be possible to find new therapeutic methods.

### Sovetskaya Vrachebnaya Gazeta, Leningrad

Oct. 30 (No. 20) pp. 1561-1640 1935 Partial Index

- \*New Method of Treatment of Diabetes G. P. Sacharov and D. M. Rossiyskiy—p. 1565
- Prophylaxis of Recurrences of Pernicious Anemia S. I. Sherman—p. 1573
- Serum Prophylaxis of Measles A. V. Pshenichnov and B. I. Raykher—p. 1579
- Incidence and Therapy of Gas Gangrene in Peace Time A. I. Egorova—p. 1592
- Thermo-Electro Massage. L. E. Rotenberg—p. 1598

**Treatment of Diabetes Mellitus**—The method described by Sacharov and Rossiyskiy consists of daily subcutaneous injections of serum of sheep immunized by injections of pancreatic tissue removed from recently deceased human beings. The therapeutic substance is a cytotoxin to which the authors gave the name of pancreotoxin. The activity of the serum and the presence in it of the cytotoxin are determined by the reaction of complement deviation. Observations were made on twenty-five patients suffering from diabetes. Some of the patients had chronic diabetes with a high blood sugar content, pronounced glycosuria and acetonuria. On the basis of their observations the authors conclude that the use of pancreotoxin produces a definite therapeutic effect in patients suffering from diabetes mellitus. This effect is made manifest by improvement in the general condition and working capacity and by disappearance of thirst and polyuria. They have noted prompt disappearance of sugar from the urine and lowering and frequently a return to normal of the blood sugar. They have demonstrated in these patients an increase in carbohydrate tolerance. The injections were not followed by unpleasant concomitant manifestations, such as are seen after the injection of insulin. A course of treatment consisted of from fifteen to forty daily subcutaneous injections of from 0.1 to 0.2 cc of serum containing pancreotoxin. Urine and blood analyses showed absence of glycosuria and normal blood sugar content two months after the course of treatment.

### Finska Läkaresällskapet's Handlingar, Helsingfors

77 589-649 (Oct.) 1935

- Pernicious Anemia in Light of Liver Therapy F. Saltzman—p. 589
- Congenital Word Blindness and Similar Disturbances During School Age. T. Brander—p. 601
- \*Contribution to Knowledge of Diffuse Polyposis of Large Intestine T. C. Nyström—p. 619

**Diffuse Polyposis of Large Intestine**—Nyström describes seven cases of polyposis of the rectum and colon. Resection of the sigmoid and descending colon gave good results in one instance, on after-examination four years later the patient was well. Four died from cancer of the rectum. He calls attention to the tendency of the disturbance to malignant transformation and to the noticeable hereditary disposition. His third and fourth cases were in brothers likewise his fifth and sixth. In his opinion only radical surgery affords prospects of satisfactory results.

### Hospitalstidende, Copenhagen

78: 1181-1192 (Nov. 12) 1935

- \*Pernicious Anemia and Myxedema S. A. Holbøll—p. 1181
- Acetylcholine Treatment in Epilepsy Together with Remarks Concerning Phenobarbital Treatment O. J. Nielsen—p. 1186

**Pernicious Anemia and Myxedema**—Holbøll reports three personal cases of simultaneous myxedema and pernicious anemia. According to Baldrige and Greene, reports of only five cases have been published previously. The differential diagnosis of pernicious anemia in myxedema has been possible only since the discovery of the specific therapy for pernicious anemia, and it must be borne in mind that the anemic conditions frequently seen in myxedema not only may be due to a simple chromatic anemia or one of the more infrequent hyperchromatic pernicious like anemias but may be an essential pernicious anemia which reacts to liver and stomach treatment.

### Norsk Magasin for Lægevidenskapen, Oslo

96: 1153-1248 (Nov.) 1935

- \*Septicopyemias Due to Bacillus Funduliformis A. Lemerre—p. 1153
- Simple Free Bodies in Elbow Joint Constitutional and Purely Traumatic H. Støren—p. 1167
- \*Sedimentation Reaction in Cerebral Tumor D. Abrahamsen—p. 1181
- \*Metastatic Pararenal Abscesses R. Steinert—p. 1185
- Local Rise of Temperature in Inflammation Focus A. Scheel—p. 1200
- Kinescopy—Objective and Subjective Practical Subjective Kinescope. S. Holth—p. 1209
- Some Roentgen Results on After Examination Following Reposition of Luxations of Hip Joint. A. Wolff—p. 1216
- Hematophorphyria Case J. Torgersen—p. 1223
- Typhoid Epidemic in Lørenskog in Spring of 1935 M. Tesdal—p. 1229

**Septicopyemias Due to Bacillus Funduliformis**—Lemerre says that these septicopyemias occur most often in persons from 20 to 30 years of age, though there have been instances in persons past 40. The onset of an angina and especially of a tonsillar or peritonsillar phlegmon followed by an intense chill on the fourth or fifth day of the angina, with recurring chills and the development of painful pulmonary infarcts, suggests septicemia due to Bacillus funduliformis. Articular foci of suppuration appear, and jaundice is a frequent manifestation in cases without jaundice there is a marked urobilinuria. Certain diagnosis depends on finding Bacillus funduliformis in the blood or in the pus from the secondary pleural or articular localizations. While recovery is possible, the prognosis is extremely grave. Death may occur after from seven to twelve or fifteen days, or after from three weeks to two months or longer. Of the seventeen cases reported in France or personally observed by the author, fourteen were fatal. Subcutaneous injections of morphine hydrochloride seem to him to be indicated and were used with good results in his last two cases. The pleural, articular or superficial suppurations are incised and drained.

**Sedimentation Reaction in Cerebral Tumor**—On the basis of his study of 132 certain cases of cerebral tumor, in which rise of temperature or other possible causes that might affect the sedimentation reaction were excluded, Abrahamsen asserts that a pathologic sedimentation reaction cannot at present be considered significant in the differential diagnosis between cerebral tumor and infectious intracranial disorders.

**Metastatic Pararenal Abscesses**—Steinert states that metastatic pararenal abscesses occur most often in men between 20 and 40 years of age, far less often in women, occasionally in the aged and in children less than 1 year of age. The two sides are equally often affected, bilateral disturbance is extremely rare. Staphylococcus aureus or albus is most frequently found, sometimes streptococci are seen, seldom Bacillus coli-communis, and in exceptional cases pneumococci and other bacteria. At times the pus is sterile in which case there is often tuberculosis. Mistaken diagnosis is common. Roentgen examination of the kidney region may show an immobilized and high diaphragm and, in more advanced cases an enlarged kidney shadow. Initial pain in the affected region is rarely absent and together with later results on palpation constitutes the most important symptom of pararenal abscess. Treatment consists of drainage through lumbar incision as in nephrectomy. The abscess may be located at the upper or lower pole, less often perirenal. With timely intervention the prognosis is good. Fifteen cases are reported. Nine patients were male and six female and the ages ranged from 16 to 59.

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## ETIOLOGY AND DIAGNOSIS IN HYPERPARATHYROIDISM

A REVIEW OF ONE HUNDRED AND THIRTY-FIVE  
PROVED CASES

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ROCHESTER, MINN

Askanazy<sup>1</sup> in 1904 suspected a relationship between the parathyroid glands and the decalcification of the skeleton in a case of osteitis fibrosa, Erdheim<sup>2</sup> in 1907 commented on the frequency of occurrence of hypertrophy of these glands in cases of osteomalacia and Hoffmeier<sup>3</sup> in 1925 noted the occurrence of decalcifying disease of the skeleton in twenty-seven of forty-five instances of enlarged parathyroid glands. However, the primary significance of tumors of the parathyroid to the skeletal lesion of generalized osteitis fibrosa was not recognized before Mandl's<sup>4</sup> operative removal in 1925 of an adenomatous parathyroid gland and the alleviation thereby of the metabolic abnormalities in a case of this disease. Mandl's only rivals for the honor of originality are Schlagenhauser<sup>5</sup> and Weil.<sup>6</sup> The former in 1915, apropos of two cases of this disease, in which tumorous parathyroid glands were discovered at necropsy, questioned the opinion, current at that time, that enlargement of parathyroid glands was a secondary phenomenon, a result and not the cause of decalcification, and recommended in advanced cases exploration and the removal of tumors if found. Weil in 1922 administered roentgen therapy to the neck in a case of generalized osteitis and obtained what he reported as remarkable benefit.

In the decade that has now passed since Mandl made this discovery, the number of reported cases of what is now known as hyperparathyroidism has increased

considerably. Castleman and Mallory<sup>7</sup> found the growing list to contain 160 cases, and to this they added twenty-five cases. However, fifty-five of the cases in their list antedated the report of Mandl's case and some of the cases they included were not clearly cases of hyperparathyroidism.

Gutman, Swenson and Parsons<sup>8</sup> a year ago collected 115 cases reported since Mandl's case. We have reviewed the literature and are willing to accept 135 reported since the date of Mandl's publication. The minimal criteria for acceptance in our compilation have been (1) that the report of the case has appeared in the literature, (2) that the description of the skeletal abnormality present be consistent with that of generalized osteitis fibrosa or, in the absence of skeletal abnormality, that indisputable abnormality of calcium metabolism, characteristic of hyperparathyroidism, has been demonstrated by the study of the blood or urine, and (3) that a tumorous enlargement, either adenoma of one or more parathyroid glands, or diffuse hypertrophy and hyperplasia of the entire parathyroid apparatus, has been found, either by operation or by necropsy. Our personal experience leads us to believe that cases which do not meet these criteria with very few exceptions, are not cases of this disease.

The small number of these proved cases that we have been able to encounter in the clientele of the Mayo Clinic has been a cause of chagrin to the several members of the staff of the clinic who have been interested in the disease ever since one of us (Wilder) reported one of the first cases in which operation was successfully performed.<sup>9</sup> The operation was performed by Rankin. While only five "proved" cases can be credited to the Mayo Clinic, twenty-one have been reported by the English writers chiefly from London, and twenty-five from one hospital in Boston. We have chided ourselves with negligence and with lack of clinical acumen, but it does not seem probable that many cases have escaped us. Those of the staff who have had experience with the condition have been called into consultation on a great many suspicious cases, and in no less than thirteen doubtful cases a surgical exploration of the neck has been resorted to. In no instance in which the clinical diagnosis was in doubt has this exploration yielded any evidence of hypertrophy or hyperplasia of the parathyroid glands, and in only one case in which there was good clinical evidence of hyperparathyroidism has exploration failed to reveal a tumor.

We have not been willing to diagnose hyperparathyroidism in senile osteoporosis, hypertrophic arthritis, Paget's disease, multiple myeloma and other clinical

From the Division of Medicine, the Mayo Clinic.  
Read before the American Association for the Study of Gonorrhea, Salt Lake City, June 24, 1935.

<sup>1</sup> Askanazy, Max. Ueber Ostitis deformans ohne osteoides Gewebe. *Arch. f. d. Celld. u. path. Anat.* 4: 398-422, 1904.

<sup>2</sup> (a) Erdheim, J. Ueber Epithelkörperbefunde bei Osteomalacie. *Sitzungsber. d. Akad. d. Wissensch. Math. naturw. Cl.* 116: 311-370, 1907. (b) Ueber den Kalkgehalt des wachsenden Knochens und des Callus nach der Epithelkörperchenextirpation. *Frankfurt. Ztschr. f. Path.* 7: 1-5, 30, 1911. (c) Rachitis und Epithelkörperchen. *Wienna* 1914. (d) Pathologische Anatomie bei Rachitis und Osteomalacie. *Wienna klin. Wchnschr.* 41: 1444 (Nov. 1), 1918.

<sup>3</sup> Hoffmeier. Ueber Vergrößerungen der Epithelkörperchen bei Osteitis fibrosa und verwandten Krankheitsbildern. *Virchows Arch. f. path. Anat.* 250: 705-735, 1925.

<sup>4</sup> Mandl, Felix. Therapeutischer Versuch bei Ostitis fibrosa generalisata mittels Exstirpation eines Epithelkörperchentumors. *Wienna klin. Wchnschr.* 58: 1343-1344 (Dec. 10), 1915. Klin. u. unil. Experimentelles zur Frage der Lokalisation und generalisierten Ostitis fibrosa. Ueber besondere Bedeutung der Therapie der letzteren. *Arch. f. klin. Chir.* 147: 1141-1146. Therapeutischer Versuch bei einem Falle von Ostitis fibrosa generalisata mittels Exstirpation eines Epithelkörperchentumors. *Zentralbl. f. Chir.* 53: 260-264 (Jan. 30), 1921.

<sup>5</sup> Schlagenhauser. Zwei Fälle von Parathyreoidectomie. *Wienna klin. Wchnschr.* 28: 11-12 (Dec. 9), 1915.

<sup>6</sup> Weil. cited by Lavigne.

<sup>7</sup> Castleman, Benjamin and Mallory, T. B. The Pathology of the Parathyroid Gland in Hyperparathyroidism. A Study of Twenty-Five Cases. *Arch. f. Path.* 11: 1-12 (Jan.), 1916.

<sup>8</sup> Gutman, A. B., Swenson, P. C. and Parsons, W. B. The Differential Diagnosis of Hyperparathyroidism. *J. A. M. A.* 107: 86-94 (July 14), 1934.

<sup>9</sup> Wilder, R. M. Hyperparathyroidism. Tumors of the Parathyroid Gland Associated with Osteitis Fibrosa. *Falkenberg* 13: 231-244 (May 1915).

entities which a few members of the profession, without good evidence it seems to us, have attributed to overfunction of the parathyroid glands. However, we have not been unaware of the fact that in early cases abnormalities may be revealed in calcium metabolism or by the presence of renal stones before recognizable lesions have occurred in the skeleton, and also that occasionally a skeletal picture resembling that of Paget's osteitis deformans may be superimposed on one characteristic of von Recklinghausen's disease. The original case of Mandl, to judge by recent reexaminations of the patient by Bauer,<sup>10</sup> Kienbock<sup>11</sup> and Mandl<sup>12</sup> seems to present an instance of this imposition of one disease on the other.

For reasons now to be given, it is suggested that the relative scarcity of cases of hyperparathyroidism in the clientele of the Mayo Clinic may be accounted for by an unequal distribution of this disease and that its incidence may be greater in some parts of the world than elsewhere. The experience in the Mayo Clinic is not different from that of other clinical centers in the same region. David Barr<sup>13</sup> of Washington University School of Medicine in St. Louis has been puzzled at the rarity of cases of hyperparathyroidism in his community. Barr,<sup>14</sup> it will be recalled, reported the first proved case in the United States<sup>15</sup> and was the first to use the designation "hyperparathyroidism."

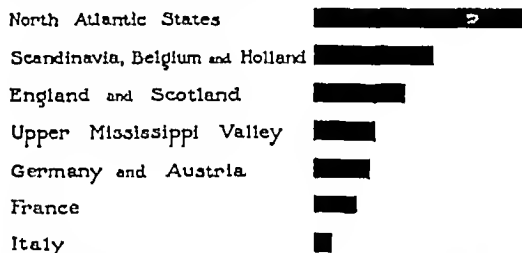


Fig 1—Distribution of reported proved cases of hyperparathyroidism. Incidence per hundred million of population.

He has written extensively on the subject and is an acknowledged authority, yet he and his associates are credited with reporting only four "proved" cases. He has told us that he has obtained determinations of serum calcium in many cases of urolithiasis without uncovering a single instance of hyperparathyroidism. Boyd<sup>16</sup> and his associates in Iowa City and Compere<sup>17</sup> in Chicago, who were among the first to recognize cases in America, have been able to report no further cases. Compere has written that he too is surprised at the number of cases found in the East.

When we arrange by regions the 135 cases accepted in our compilation, we find (chart 1) that forty-one come from the North and Central Atlantic States,

twenty-one from England and Scotland, twenty-one from Austria and Germany, eighteen from Scandinavia and the Netherlands (Sweden, Norway, Denmark, Holland and Belgium), twelve from the Upper Mississippi Valley, nine from France, and four from Italy. The populations of these respective regions are roughly equal, with the exception that the region of Germany and Austria contains about twice as many people as the others. If we adjust the figures for the actual differences in population, we arrive at the following incidences for each 100,000,000 of population: North Atlantic States (Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, Delaware, Pennsylvania and Maryland) 113, North Sea States (Scandinavia, Holland and Belgium) 623, England and Scotland 498, Upper Mississippi Valley (Ohio, Indiana, Illinois, Michigan, Wisconsin, Missouri, Iowa, Minnesota, Kansas, Nebraska, South Dakota and North Dakota) 312, Germany (including Austria) 292, France 215, Italy 95.

We recognize that the number of cases is small for final conclusions in the matter of regional distribution, that some cases which we have omitted for lack of criteria of "proof" may be cases of hyperparathyroidism, and that other cases have been recognized here and there but not reported. It is to be supposed, however, that the unproved or unreported cases are distributed among the regions named in about the same proportions as the "proved" and the distribution of the "proved" cases is certainly too irregular to be satisfactorily explained either by coincidence or by the supposition that more active and more general interest in the disease in Boston, London and Scandinavia has led to the recognition of a comparatively large number of cases in these regions. It must be remembered that the original discovery of the relationship of the parathyroid gland to the von Recklinghausen syndrome was made in Vienna and that the Austrian and German clinics are very alert to the condition, that in France there is a group of physicians, especially Leri,<sup>18</sup> Lievre,<sup>19</sup> Leriche<sup>20</sup> and Jung,<sup>21</sup> who have been writing extensively on this subject, and that interest has not been lacking in Italy and Spain, to judge from the numerous titles in the literature. In its advanced form at least, and nearly all the "proved" cases have been well advanced, the disease is not difficult to recognize and it is doubtful whether more than a very few of the cases in our compilation would have escaped receiving a correct diagnosis in any one of the principal clinics and hospitals in the several regions named.

Much evidence has been accumulated to indicate that lack of ultraviolet irradiation or deficiency of vitamin D is a very important factor in determining hyperplasia of the parathyroid glands. The evidence bearing on this has been principally presented in the communications of Nomidez and Goodale<sup>22</sup> and of Higgins and Sheard,<sup>23</sup> who have definitely established that deprivation of ultraviolet rays in chickens deprived of other sources of vitamin D leads to hypertrophy and hyperplasia of the parathyroid glands. One of us (Wilder)

10 Bauer Julius. Ueber Hyperparathyreoidismus und verwandte Zustände. Beitr z klin Chir. 159: 583-596, 1934.

11 Kienbock R. Ueber die Pagetsche Knochenkrankheit und Epithelkörperchen-tumoren. Beitr z klin Chir. 159: 597-611, 1934.

12 Mandl Felix. Authentischer Bericht über den ersten mit Epithelkörperchenextirpation behandelten Fall von Recklinghausenscher Knochenkrankheit. Beitr z klin Chir. 160: 295-301, 1934.

13 Barr David. Personal communication to the authors.

14 Barr D P, Bulger H A., and Dixon H H. Hyperparathyroidism. J A M A 92: 951-952 (March 23) 1929.

15 The diagnosis of the famous case of Captain Martel made by Dr Eugene Du Bois in 1906 was the first clinical recognition of the condition in this country but it was not until much later that the nature of the case was proved by the finding of a parathyroid tumor (Hannon R R, Shorr E., McClellan W S and Du Bois E F. A Case of Osteitis Fibrosa Cystica (Osteomalacia?) with Evidence of Hyperactivity of the Parathyroid Bodies. Metabolic Study. J Clin Investigation 8: 215-227 (Feb 1930).

16 Boyd J D. Personal communication to the authors. Boyd J D, Milgram J E., and Stearns Genevieve. Clinical Hyperparathyroidism. J A M A 93: 684-688 (Aug 31) 1929.

17 Compere E L. Bone Changes in Hyperparathyroidism. Surg Gynec & Obst. 50: 783-794 (May) 1930. Personal communication to the authors.

18 Léri A. cited by Lièvre<sup>19</sup>.

19 Lièvre J A. Lostoëse parathyroïdienne et les ostéopathies chroniques. Paris: Masson et Cie, 1932.

20 Leriche R. cited by Lièvre<sup>19</sup>.

21 Jung Adolphe. Chirurgie des parathyroïdes. Paris: Brodard et Taupin Coulommiers, 1933.

22 Nomidez J F and Goodale H D. Histologic Studies on Endocrines of Chickens Deprived of Ultraviolet Light. I. Parathyroids. Am J Anat 38: 319-341 (Jan) 1927.

23 Higgins G M and Sheard Charles. The Effect of Selective Solar Irradiation on the Parathyroid Glands of Chickens. Am J Physiol 86: 299-310 (May) 1928. Higgins, G M, Sheard Charles and Wilder R M. The Effects of Ultraviolet Irradiation on Rachitic Chickens. Anat Rec 68: 205-216 (Jan) 1934.

with Higgins and Sheard<sup>24</sup> showed that this hyperplasia could be prevented to some extent by injecting parathyroid extract in birds deprived of sunshine and vitamin D. The conclusion was reached that the ability of the parathyroids to increase the supply of their product represents a compensation mechanism which protects the organism against relative degrees of deficiency of vitamin D. It will be recalled that Erdheim in 1907<sup>25</sup> considered that hyperplasia of the parathyroid apparatus in osteomalacia, and other decalcifying diseases of the skeleton, was in the nature of a compensation, although at that time vitamin D was still unknown.

The compensation for deficiency of vitamin D that is effected by hyperplasia of the parathyroids is usually not overdone, that is to say, the increased supply of hormone usually does not exceed the increased need for it. But occasionally, as previously suggested in one of Johnson's<sup>26</sup> papers, an overcompensation may occur, thus leading to the symptoms of hyperparathyroidism. A few instances of the disease in which diffuse hyperplasia of multiple glands has been found, as opposed to the more usual solitary adenoma, may be explained on this basis. Adenoma formation, we suggest, is to be attributed to embryonic cells or cell nests which will be found only rarely in parathyroid glands and then usually in only one gland. Deprivation of vitamin D, and stimulation thereby of the parathyroid apparatus, leads to the proliferation of such cells and thus to the formation of adenoma. The resulting tumor frequently possesses the power of making parathyroid hormone. If it does, its function will be without the restraint that regulates the normal glands and thus it will provide a supply of hormone unrelated to the requirement of the body. The problem is analogous to that of adenoma of the thyroid gland. The deficiency of vitamin D places the parathyroid gland under stimulation, with the resulting development in the occasional case, of adenoma, deficiency of iodine places the thyroid gland under stimulation with the resulting development in some cases, of adenoma. The adenomas in both instances may or may not provide hormone. If they do, one encounters the symptoms of hyperparathyroidism on the one hand, or of hyperthyroidism on the other.

It may be asked why diffuse hypertrophy and hyperplasia of the entire parathyroid apparatus is not always found when vitamin D is deficient. The answer is that it always is found in chicks but that the parathyroid apparatus of the majority of men and women is capable of increasing its function without hypertrophy. The evidence of increased function in children deficiently supplied with vitamin D is provided by Hamilton and Schwartz.<sup>27</sup>

It may also be asked why a stimulus sufficient to provoke the proliferation of an embryonic cell nest into an adenoma does not cause diffuse hypertrophy of the other glands of the parathyroid apparatus. The reason is that the tumor once formed and functioning assumes the work of the entire apparatus and thus places the balance of the apparatus at rest. Evidence of the resting state of the other glands is provided by the temporary tetany that so frequently follows removal of a solitary parathyroid tumor.

This is as far as our present knowledge of the physiology of the parathyroid glands permits us to venture, but it is far enough to see that a difference in the supply of ultraviolet energy in two regions could be a factor in determining a different incidence of adenoma formation in the respective populations of these regions. The amount of sunshine in Spain and Italy is certainly greater than that in England and northern Europe, and the amount in the Upper Mississippi Valley, and more particularly in the plains regions of the Central West, from which come about 70 per cent of the patients of the Mayo Clinic, is greater than that in New England and New York. The annual mean cloudiness, as depicted by Ward<sup>28</sup> from the statistics of the United States Weather Bureau, is 50 per cent for the Upper Mississippi Valley, 48 per cent for the Northwestern plains states, and 41 per cent for the Central plains states. That for New England is 55

per cent. These differences are small, but they probably do not indicate the entire difference in the amount of ultraviolet rays received by the respective populations. The importance of haze fog and smoke in the atmosphere has been emphasized by numerous writers on sunshine and vitamin D. Hill<sup>29</sup> commented that Birmingham, England compared to Oxford loses 41 per cent of sunshine in the winter and Manchester, compared to Stonyhurst 37 per cent.

What light does reach the citizen through his smoke-befouled atmosphere he gets little

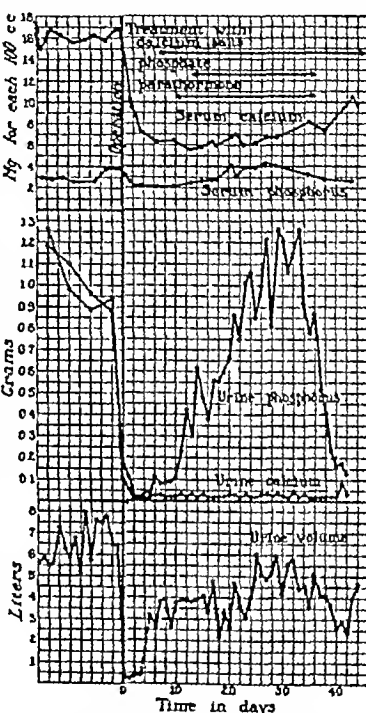


Fig. 2 (case 5 Mayo Clinic series) — Showing the precipitate drop in calcium in the blood and urine after operative removal of an adenoma of the parathyroid.

of shutting himself up as he does nearly all day, in close rooms while engaged in sedentary occupations, such sunlight as he receives is filtered through glass and robbed of its ultraviolet rays. England and New England in which the incidence of hyperparathyroidism seems to be higher are coastal regions with comparatively much haze and fog. England and New England also are industrial regions in which a relatively large part of the population lives indoors in a smoky atmosphere. Italy and Spain and the Central states of the United States are regions of much less fog and haze also they are to a much larger extent agricultural with a population living outdoors more of the time and in an atmosphere that contains less smoke. The proportion of urban to rural inhabitants of the North Atlantic Coast states is 3.5 to 1, for the states west of the Mississippi River it is less than 1 to 1.

<sup>24</sup> Wilder R. M., Higgins C. M. and Sheard Charles. The Significance of the Hypertrophy and Hyperplasia of the Parathyroid Glands in Rickets and Osteomalacia. *Ann. Int. Med.* 10: 609 (March) 1914.  
<sup>25</sup> Johnson J. L. Experimental Chronic Hyperparathyroidism. IV. Effects of Administration of Irradiated Ergosterol. *Am. J. M. Sc.* 153: 1-12 (June) 1917.  
<sup>26</sup> Hamilton, Bengt and Schwartz Charles. Rickets and Hyperparathyroidism. *J. Clin. Investigation* 11: 51 (July) 1932.

<sup>27</sup> Ward R. deC. The Climates of the United States. Boston: Ginn Co. 1928.

<sup>28</sup> Hill Leonard. Sun time and Open Air. Their Influence on Health. ed. 2. London: Edward Arnold & Co. 1925.

It is not to be supposed that deprivation of vitamin D is the only factor involved in this problem. The determining condition in adenoma formation must be the congenital structure of the organ involved and must depend on the presence or absence of cells that preserve into adult life an embryonic capacity for proliferation. If there are no such cells in a gland, no tumor will occur no matter how great the stimulation to which the gland is subjected, thus adenomas of the parathyroid glands can never occur in more than a small percentage of the population. However, this factor of potentiality to adenoma formation must affect the population of all regions equally, therefore it cannot be invoked to account for regional differences. As we see the situation, it is thus. An equal number of persons in two regions are born with cells possessing special capacity for proliferation into tumors of the parathyroid glands. Whether or not tumor formation occurs depends on the intensity of the stimulation to which these cells are subjected. Therefore, in regions where the parathyroids are under more strain, more cases of tumor will come to view, while in other regions where the strain is less, fewer tumors will be seen. In neither region will the parathyroid glands be affected when they are not possessed of the potentiality in question, because, no matter what the degree of stimulation, they cannot respond in this manner. Thus workers in mines might receive no sunlight at all for years on end and develop no parathyroid tumor.

The point is that the lack of vitamin D can be sustained by most adult persons without harm but that the few in every population who possess the potentiality in question develop tumors of their parathyroid glands. The number of persons with this potentiality will represent the same very small percentage of all populations, but if the population of one region is exposed to more stimulation, the number of parathyroid tumors developing in that region will be greater. Analogy is again suggested with the thyroid problem. The majority of persons in the goiter belt resist the development of adenomas of the thyroid, even though they are exposed to the same environmental conditions as the persons who develop goiter. On the other hand, the number of adenomas of the thyroid that come to light in the goiter belt greatly exceeds the number found in other regions. The stimulation to adenoma formation, in the case of the thyroid is a deficiency of iodine, with the parathyroid it is the deficiency of vitamin D.<sup>29</sup>

We believe this explanation is adequate to account for the relatively high incidence of hyperfunctioning adenomas of the parathyroid glands in regions such as England and New England where the likelihood of deficiency of vitamin D is favored by the indoor life of large numbers of the population and by the despoiling of what outdoor sunshine is received by its filtration through an atmosphere containing relatively larger amounts of haze, smoke and fog.

In addition to revealing this interesting regional distribution of "proved" cases of hyperparathyroidism, our study provides other information that may be of interest. We can review it only briefly now, for lack of space. It will be considered more fully by one of us (Howell) in a subsequent report. The range in age of the patients at the time of their examination is from 13 years to 74 years. Of males the largest number has

been in the fourth decade. Of females, the largest number is in the fifth decade.

Males numbered thirty-one, females ninety-nine, indicating the marked predilection of the disease for females. In five cases, reports of the sex of the patients were not given.

The past history of the patients is probably of more importance than has been recognized. The intake of calcium-containing food and the opportunity for absorption of ultraviolet rays seem not to have been inquired into in most cases. In the first example of the disease reported from the Mayo Clinic, the patient had received very little calcium-containing food and had spent most of her life indoors.

A story of renal colic, before the time of appearance of other evidence of disturbed calcium metabolism, was present in eighteen cases. An example is provided by the case from the Mayo Clinic reported recently by Brown,<sup>30</sup> Pemberton<sup>31</sup> and Camp.<sup>32</sup> The approximate duration of the disease from the time of onset of the first symptoms to the time when the diagnosis was established by the demonstration of enlarged parathyroid glands has varied from a few months to thirty-nine years. There is reason in many cases to believe that the course is intermittent, that periods of greater output of parathyroid hormone alternate with other periods of smaller output, thus causing exacerbations and remissions of the symptoms, and changes in concentration of blood calcium and in the calcium balance.

The most frequent complaint on the part of the patients has been pain in the lower extremities. This frequently is localized in the bones. Such pain, together with loss of tone of muscles, weakness and lassitude, was the outstanding symptom in the experimental hyperparathyroidism of a normal subject studied by Johnson and Wilder.<sup>33</sup> However, some patients seem not to have been seriously incapacitated until a fracture occurred, and other patients consulted their physicians because of a tumor of the bone (giant-cell tumor) or because of renal colic. A subsidiary complaint noted in twenty-five cases was polyuria.

The parathyroid tumor could be palpated in the neck in fifteen instances, but in many other instances a tumor palpated in the neck proved to be an adenoma of the thyroid, and the tumor of the parathyroid was found in deeper tissues. Tumors of the parathyroid glands are usually placed so deeply as to escape the fingers of the examiner. In the case reported by Brown<sup>30</sup> the tumor, because of its content of calcium, was revealed by the roentgenogram.

The abnormalities of the bones, their bending, shortening, fracture cysts, and giant-cell tumors, and the roentgenologically more or less characteristic type of generalized osteoporosis, have been so fully and frequently described as not to require attention here. Diffuse calcification of the renal parenchyma has been noted at necropsy in several instances, and in at least one instance, reported by Albright<sup>34</sup> and his associates, has been intensive enough to show itself clearly in roentgenograms. Roentgenologic evidence of diffuse

<sup>30</sup> Brown, A. E. Hyperparathyroidism with Nephrolithiasis. *Proc. Staff Meet. Mayo Clin.* 10: 417-421 (July 3) 1935.

<sup>31</sup> Pemberton, J. de J. in discussion. *Proc. Staff Meet. Mayo Clin.* 10: 423-424 (July 3) 1935.

<sup>32</sup> Camp, J. D. in discussion. *Proc. Staff Meet. Mayo Clin.* 10: 421-423 (July 3) 1935.

<sup>33</sup> Johnson, J. L. and Wilder, R. M. Experimental Chronic Hyperparathyroidism. *Metabolism Studies in Man. Tr. A. Am. Physicians* 40: 162-170 (1931). *Am. J. M. Sc.* 182: 800-807 (Dec.) 1931.

<sup>34</sup> Albright, Fuller, Baird, P. C., Cope, Oliver and Bloomberg, Esther. Studies on the Physiology of the Parathyroid Glands. IV. Renal Complications of Hyperparathyroidism. *Am. J. M. Sc.* 187: 49-65 (Jan.) 1934. Albright, Fuller and Bloomberg, Esther. Hyperparathyroidism and Renal Disease, with a Note as to the Formation of Calcium Casts in This Disease. *J. Urol.* 34: 1 (July) 1935.

<sup>29</sup> It is possible that the actual deficiency is one of calcium. The supply of calcium received by most persons in their food is on the borderline of adequacy so that deficiency of vitamin D may readily result in actual inadequacy of the calcium. Therefore deficiency of vitamin D is the factor with which we are most concerned.



calcification of the kidneys frequently was obtained by Johnson in rats that had been given injections of parathyroid extract. The formation of renal pelvic stones seems to depend on the interplay of other factors, such as obstruction and infection. Thus Mandl and Uebelhör<sup>35</sup> not long ago caused renal pelvic stones to form in the pelves of guinea-pigs by injecting parathyroid extract and intermittently obstructing the flow of urine, whereas without such obstruction renal stone has not been observed in experimental animals. Pelvic stone has been detected in an impressively large number of human cases, as has been emphasized by the Boston writers.

One other topic should be mentioned briefly, namely, the tetany that is almost always observed in hyperparathyroidism when the offending hyperplastic parathyroid tissue is removed. The cases in which operation was performed, in our review, number 109, and in their reporting this tetany or an equivalent drop of blood calcium after operation is mentioned in forty-eight. The phenomenon is so characteristic that its absence gives reason to doubt the effectiveness of the operation, implying either that the diagnosis of hyperparathyroidism is wrong or that the surgeon has failed to find the offending tumor (chart 2). The phenomenon has been absent in those cases which we have found in the literature when the surgeon has removed one or two normal sized parathyroid glands in the expectation of affecting the course of diseases such as spondylitis, multiple myeloma, and Paget's osteitis deformans. In nearly all, if not all, of those cases the concentration of blood calcium was normal before operation and remained normal afterward. When true hyperparathyroidism has existed, even if the concentration of blood calcium was normal beforehand—and normal values for blood calcium have been reported in a number of the cases on record—operation has been followed one or two days later by a drop in the blood calcium when this was studied, of at least 3 mg per hundred cubic centimeters. Symptoms of tetany almost always accompanied this drop and their treatment with calcium was almost always necessary. The symptoms as a rule did not appear until the blood calcium had reached a value below 7 mg per hundred cubic centimeters, but their development and severity depend more on the degree of the fall of the blood calcium than on the actual value to which it falls. Thus in the case recently reported by A. E. Brown<sup>36</sup> the patient had tetany after operation when the concentration of blood calcium was 9 mg per hundred cubic centimeters but this concentration represented a drop of 5 mg from the preoperative level.

In this discussion our attention has been limited to those features of hyperparathyroidism which bear on the problems of its etiology and diagnosis. So intriguing is the subject that knowledge about it has been acquired very rapidly. The disease is unusual and yet although barely ten years has elapsed since its essential pathogenicity was recognized it is understood better than are many of the more common diseases. The examiner should avoid seeing hyperparathyroidism where it does not exist and be sparing of surgery unless the evidence establishes the diagnosis. Cases of true hyperparathyroidism are rare especially in the Central West where an abundance of ultraviolet radiation exists. They can easily be recognized by the diagnostic methods at hand and while it is of the

utmost importance to recognize them early, so that the patients may receive the unquestionable benefit that surgery has to offer them, this is no justification for resorting to surgery in cases that are not clearly instances of the disease.

## POST-TRAUMATIC NARCOLEPSY

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Reports of narcolepsy were infrequent prior to the World War compared with those which have appeared since the widespread epidemics of influenza and epidemic (lethargic) encephalitis. This observation applies similarly to cases of parkinsonism. Differences of opinion have existed as to what cases come within the term "narcolepsy" as first used by Gelineau<sup>1</sup> in 1880. The syndrome of pathologic sleep was brought to the attention of the medical profession by Westphal<sup>2</sup> in 1877 but was not defined as narcolepsy. Loewenfeld<sup>3</sup> in 1902 first recognized the significance of cataplexy as a symptom, while Henneberg<sup>4</sup> was the first to use the term "cataplexy." The first recognizable case of pathologic sleep was described by Charles Dickens in his *Pickwick Papers* in 1837, as depicted in his fat boy Joe, who went to sleep while serving the guests and on another occasion while masticating a large piece of pie, only to finish his task after being awakened by Mr. Wardle. Early writers regarded the syndrome of somnolence and cataplexy as a neurosis, while more recent observers believe that actual pathologic changes are present. Although many cases of the so-called idiopathic variety were described prior to the war, the majority of the post-traumatic cases have been reported since that time. In Daniels'<sup>5</sup> dissertation on narcolepsy a sharp distinction was made between cases in which head injury was merely a precipitating or incidental cause and others in which the trauma was a definite causative factor of the syndrome. It is questionable whether some cases are the sequel of trauma or of encephalitis. This is especially interesting since Osnato and Gihberti<sup>6</sup> have shown how the diffuse parenchymatous degeneration of the brain following head injury may closely resemble the lesion of encephalitis, of whatever cause. They have also demonstrated a similarity in the symptomatology of the early stages of head injury and the early phases of an acute encephalitis and have shown statistically the frequency of somnolence in the two classes.

The cases reported here are divided into two groups. Group 1 includes those presenting the two phases of the disease, namely diurnal attacks of sleep and cataplexy, as described by Gelineau<sup>1</sup>. The term true narcolepsy is therefore limited to group 1.

CASE 1.—Singer and Echter<sup>7</sup> report a case in which a man aged 33 was thrown from a horse when he was 18 years

Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 12, 1935.

1. Gelineau, De la narcolepsie. *Gaz. d. Hop.* 53: 626 (July 8) 1880.  
2. Westphal, C. *Eigenartige mit Ein schlafen verbundene Anfälle.* *Arch. f. Psychiat.* 7: 31, 1877.

3. Loewenfeld, L. *Ueber Narcolepsie.* *Munch. med. Wchnschr.* 40: 1641, 1902.

4. Henneberg, *Ueber genuine Narcolepsie.* *Neurol. Zentralbl.* 35: 1416.

5. Daniels, L. E. *Narcolepsy.* *Medicine* 13: 1 (Feb.) 1934.  
6. Osnato, Michel, and Gihberti, Vincent. *Le trouble du sommeil Traumatisé.* *Encephalitis Arch. Neurol. & Psychiat.* 18: 181 (Aug.) 1927.

7. Singer, Kurt and Echter, J. *Ueber Narcolepsie.* *Ztschr. f. d. f. Neurol. u. Psychiat.* 36: 28, 1917.

35. Mandl, Felix and Uebelhör, R. *Parathyreoidektomie bei Nierenstein (Experimentelle Studie).* *Zentralbl. f. Chir.* 60: 680 (Oct.-Nov.) 1933.

old. He struck the ground with the occiput and was unconscious for from one to two hours, there was no bleeding from the nose or mouth. Following the injury he complained of severe headaches, accompanied by somnolence, which occurred three or four times a day and was irresistible. He fell asleep while singing in the church choir, while dancing, and on several occasions during coitus. When he was in the army he would dream vividly of fighting the French and would jump out of bed. On another occasion he began singing "In der Heimat da ist es schoen" in his sleep. On the slightest surprise he would develop typical cataplectic attacks.

CASE 2—Redlich<sup>8</sup> reports a case in which a man aged 21, had fallen from a sled when 14 years old, striking his forehead on the ice. The boy was unconscious for an unstated period after the accident, two teeth were knocked out, and there was bleeding from the nose and mouth. Several days after the injury the boy, who had been a good scholar, noted that he could not concentrate, that his memory was failing and that he would fall asleep frequently, even while walking. Occasional attacks of sleep lasted from one to two days. He was better in the winter and worse in the summer. Noting this, he developed the habit of putting cold water on his head to ward off the somnolence. Nocturnal sleep was normal. He had definite cataplectic seizures when he laughed heartily, falling as though shot but not losing consciousness. He took his illness much to heart and attempted suicide, but the revolver missed fire.

CASE 3—Haelen<sup>9</sup> reports a case in which a man aged 39 suffered a severe head injury, followed at once by loss of consciousness and vomiting. Within a month of the injury, typical narcoleptic attacks appeared. The attacks were initiated by a great sense of weariness, the eyes would fall shut and the patient would sleep from ten to twenty minutes, awakening refreshed. The attacks occasionally came on so suddenly that the man was injured by falling. Later very typical attacks of cataplexy induced by different emotional reactions occurred. Every gradation of cataplexy from simple weakness to complete collapse occurred. The patient became irritable, nervous and sensitive and endeavored to resist emotional attitudes of all sorts. These with the personality changes, distinguished the case in the author's estimation from the usual cases of narcolepsy.

CASE 4—Daniels<sup>10</sup> reports a case in which a man, aged 22 complained of frequent attacks of an irresistible desire to sleep which had appeared shortly after a severe head injury six years previously. On the occasion of the injury consciousness was completely lost for a few minutes, but mental confusion persisted for a week, and a retrograde amnesia for events immediately connected with the accident was still evident when the patient was admitted to the clinic. Changes in personality occurred: increased irritability, frequent outbursts of temper and lack of judgment. The patient stated that occasionally, when he was excited, strength seemed to leave his arms and legs momentarily. Ephedrine sulfate gave little relief but encephalography, which revealed little of significance was rapidly followed by a disappearance of the abnormal drowsiness.

CASE 5—Thiele and Bernhardt<sup>11</sup> report a case in which a man aged 20, was thrown from a wagon striking his head and losing consciousness for about fifteen minutes. Following the injury a severe headache developed which recurred at frequent intervals. The patient had definite attacks of pathologic sleep and clear-cut attacks of cataplexy which came on almost immediately following the injury. At no time did he lose consciousness during these attacks, he would remain prone for a few moments and then arise, saying "It is over."

CASE 6—Thiele and Bernhardt<sup>11</sup> also report a case in which a man aged 39 was struck on the right temporal region by an iron bar and was unconscious for a brief period. For the week following the injury the patient was nervous, trembled continuously and slept at intervals about eighteen hours daily. The attacks of somnolence increased in frequency during the next two years until he was having from three to thirty short

attacks daily, of which he recognized two phases: one in which he slept for only a minute or so and the other precipitated by affective reactions, which resulted in a complete collapse of a few moments' duration.

We have recently seen a case belonging in group 1.

CASE 7—A man, aged 22 was knocked down by an automobile. The right side of his head was injured but he did not lose consciousness. Immediately after the accident he was able to go to his home alone, after a scalp wound had been dressed. He suffered from stiffness in the neck for a few days but otherwise felt normal. Within three weeks, attacks of drowsiness and diurnal sleep commenced and would occur several times daily. He slept for only a few minutes at a time while at his work, but on returning home he would sleep for two or three hours unless aroused. He fell asleep while eating at the table or when driving an automobile and even had a collision during such an attack. About a month after the onset of diurnal attacks of somnolence he had the first cataplectic seizure when he was startled by the noise from the horn of a passing car. He slumped in his seat and could not steer his car and disaster was averted only by the quick action of his companion. A few hours later, while being greeted by relatives, he was so overjoyed that he slumped again to the ground, unable to speak or move for a few moments. The relatives thought he had had a petit mal attack. A day or two later a similar attack was initiated when he hooked a large bass while fishing with friends, who had to land his catch because of his temporary weakness. Like attacks have frequently occurred since that time on similar occasions. At another hospital he was studied: roentgenograms were made and a diagnosis of post-traumatic epilepsy was made, he was placed on a restricted fluid intake and phenobarbital to no avail. When examined by one of us (Hall) in September 1933 the pupils were equal and reacted to light and in accommodation, there was no nystagmus, and he did not complain of diplopia. The ophthalmoscope showed the fundi to be normal. The strength was good in both the upper and lower extremities, there was no ataxia of station or gait. All the deep reflexes were present and normal. The abdominal reflexes were normal. The roentgenograms taken at another hospital were examined and showed the sella to be normal with no evidence of skull fracture. A diagnosis of narcolepsy with cataplexy as the result of a cerebral trauma three weeks prior to the onset of the syndrome was made. The patient was given 25 mg of ephedrine sulfate three times a day, and he has since been free of attacks as long as he takes the drug regularly. About nine months ago his medicine was finished and before he could procure another supply he fell asleep while wheeling sand in a wheelbarrow. He has returned to his former occupation of bank clerk and has no attacks as long as he takes the medicine regularly.

Group 2 includes cases presenting pathologic and paroxysmal attacks of somnolence only.

Thiele and Bernhardt<sup>11</sup> report a case in which a boy, aged 15, in a fit of despondency, shot himself in the right temple. Shortly after the injury attacks of somnolence developed. He fell asleep in theaters, while riding in street cars, and while standing, but at no time did he have cataplectic attacks.

Lhermitte<sup>12</sup> reports three cases. A man, aged 33, received a concussion as the result of a shell explosion. Three weeks later an irresistible desire to sleep developed. He fell asleep while walking and eating and was finally removed from his company with the diagnosis of drunkard. In the second case a man aged 30, was shell-shocked, and five months later prolonged periods of diurnal sleep developed. The sleep was irresistible and the desire could not be overcome by mental effort. Eight months later convulsive attacks developed with loss of consciousness. The third case occurred in a soldier, aged 23, who had been injured by a shell fragment in the left temporal region, accompanied by temporary loss of consciousness and aphasia. Several days

8 Redlich E. Year Book of Psychiatry 3<sup>rd</sup> 68 1917

9 Haelen Ein Fall von Narcolepsie, Zentralbl f d ges Neurol u. Psychiat 51 861 1928

10 Daniels L. E. Post Traumatic Narcolepsy Proc. Staff Meet. Mayo Clin. 489 (Aug 24) 1932

11 Thiele Rudolf and Bernhardt, Hermann Beitrage zur Kenntnis der Narcolepsie Abhandlungen aus der Neurologie, Psychiatrie Psychologie und ihren Grenzgebieten Berlin S Karger 69 1 1933

12 Lhermitte J La forme narcoleptique tardive de la commotion cérébrale Paris med 8:509 (Dec. 28) 1918

later his physicians were amazed by the numerous attacks of sleep that the patient had during the daytime, while his nocturnal sleep was normal. In the fourth case reported by the same author, a soldier, aged 26, was struck on the left frontal region by a piece of shrapnel. Immediately following this he had dreams of war terror, while during the day he would be overcome by attacks of profound sleep. He would fall asleep while walking, talking or eating. As this group indicates, no cataplectic attacks were observed in any of these cases.

Souques<sup>13</sup> reports a case following trauma with *comotio cerebri* in a young soldier in which the seizures of pathologic somnolence were typical. In this case there was marked pleocytosis in the spinal fluid. In the second case reported by Souques a cannoneer, aged 26, was stunned by shell-burst and hurled into the air, striking his head. He was unconscious for two days and showed a right hemiparesis, accompanied by aphasia. Three or four days following the accident pathologic attacks of diurnal sleep appeared, at first several times daily and finally changing to one attack daily. These attacks would last for about five or six minutes on an average. Spinal puncture at that time showed an increased pressure of the fluid and the presence of about 40 cells. Eight months later another lumbar puncture was made and the spinal fluid Wassermann reaction was found to be positive, whereas on all the previous occasions it had been negative. There was no change in his attacks of somnolence under antiepileptic therapy.

Papastratigakis<sup>14</sup> reports the case of a man, aged 25, whose head had been caught between two carts while he was working in a quarry. He lost consciousness for several hours. Mental confusion lasted three or four months. During this state of mental confusion he would have periods of so-called narcoleptic attacks. A parkinsonian mask, cogwheel rigidity, and a rhythmic tremor finally developed. We include this case because of the typical Parkinson state as the result of trauma.

Pollock<sup>15</sup> reported the case of a young married woman who was rendered unconscious in an automobile accident. Three hours following the injury she returned to consciousness and complained of a severe headache and insomnia. A bloody spinal fluid was obtained on a lumbar puncture. Two weeks later, polyuria of 7 or 8 liters a day developed. At about the same time irresistible attacks of sleep commenced, and she would fall asleep standing or even talking. She would sleep for as long as ten minutes at a time but awakened quite refreshed. She had no cataplectic attacks.

Kahler<sup>16</sup> reports a case of pathologic sleep following a history of head injury. The time elapsing between the injury and the onset of the diurnal attacks of abnormal sleep covered a period of several years. Consequently we are not inclined to regard his case as of post-traumatic origin.

The majority of the cases reported in this paper are typified by the close relation between the time of the head trauma and the onset of pathologic and paroxysmal attacks of diurnal sleep.

The investigation of cases of post-traumatic narcolepsy renews interest in the etiology of the so-called idiopathic types of narcolepsy for in the cases con-

sidered, the exciting cause is rather obvious and one can speculate with some degree of certainty on the changes in the brain. At the same time one cannot ignore the rôle that epidemic encephalitis or some other inflammatory disease of the hypothalamic region plays as a cause of narcolepsy, as it is an obvious fact, which must not be overlooked, that narcolepsy with cataplexy is rarely the sequel of head injury, which is a rather common accident. While our contribution to the subject of narcolepsy has not shed any light on its pathogenesis, we offer no apology because we have been unable to find any necropsy records from which we can quote. It is not within the scope of this paper to discuss theories. Those who may feel inclined to study the pathogenesis of narcolepsy further may consult the research studies of Pavlov,<sup>17</sup> the studies of Kleitman<sup>18</sup> on the subject of sleep, with expression of his own views, the contribution of Levin<sup>19</sup> on the pathogenesis of narcolepsy, and the work of Ranson<sup>20</sup>

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#### ABSTRACT OF DISCUSSION

DR. HENRY W. WOLTMAN, Rochester, Minn. For the patient himself narcolepsy is dreadfully serious, even the symptoms of epilepsy can hardly cause greater distress or greater incapacity. Some difficulty is encountered in trying to establish criteria by which an injury may be adjudged the cause of narcoleptic and cataplectic seizures. The authors have stressed the time relationship. Other authors emphasize loss of consciousness and gross injury to the brain. The time relationship however, may carry convincing significance. Two years ago a boy, aged 6 years fell some 20 feet into a gravel pit. He was not rendered unconscious and could walk home unassisted. On arrival, he was frightened and extremely pale and soon fell asleep. From that day on his parents and teachers were deeply concerned over his attacks of drowsiness. Once he fell off a chair while asleep, and again he walked three blocks while asleep. The suggestion that narcolepsy and cataplexy originate in parts of the cortex may meet objection, but in the following case the aura may be compatible with it. A man aged 38, said that sixteen years before a 20 foot fall rendered him unconscious for five hours. Shortly thereafter narcolepsy appeared. He complained of attacks of numbness, which began in the left palate and spread rapidly to the left ear the eye and the nose. Then he would fall asleep. He also observed that when he was extremely interested, as in watching a prize fight, the aura did not precede the dormital attack. Recently I observed a patient in whom gain in weight and dreams so vivid as to cause him to leave his bed and search for a friend whose voice he thought he had heard were much more impressive than a newly acquired facility in taking a nap. I suspect that as in epilepsy there may exist an incomplete or partial narcolepsy. The striking arrest of narcoleptic and cataplectic attacks by ephedrine was demonstrated convincingly by Doyle and Daniels. Marked improvement may also follow encephalography. Recently Love called my attention to another possible remedy. Following cervicodorsal sympathectomy and ganglionectomy for another purpose a coexisting narcolepsy disappeared almost completely. I believe that the study of narcolepsy eventually will throw light on some little understood phenomena.

DR. JOHN B. DOYLE, Los Angeles. It has been demonstrated that in five of the thirteen cases previously reported and in the authors case, attacks of cataplectic nature as well as of irresistible sleep were present. This should dispose of the belief that the syndrome flourishes in its fulness only in the idiopathic or cryptogenic cases. Like Thiele and Bernhardt I feel that the close resemblance of the cryptogenic, postencephalitic and post-traumatic cases forces the conclusion that all the

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16 Kahler H. *Yearbook for Psychiatry* 14:1 1 1921.

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18 Kleitman S. *Sleep*. *Physio. Rev.* 9 624 (Oct.) 1929.

19 Levin M. J. *Neurol. & Psychiat.* 14 1 1933.

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cases rest on some pathophysiologic variation probably in the hypothalamus. It should be remembered, however, that the post-traumatic cases may also manifest any of the variegated symptoms and signs encountered in patients who have had injuries to the head. There has been considerable difference of opinion among authors as to whether a diagnosis of narcolepsy is justified by the presence of attacks of irresistible sleep in the absence of cataplexy. If the attacks of pathologic sleep are well defined and especially if other common symptoms manifested by narcoleptic patients can be elicited the diagnosis may safely be made. As long as sixteen years has elapsed from the onset of spells of irresistible sleep until the development of cataplectic seizures Daniels and I have shown that the course of narcolepsy is exceedingly chronic and persistent. Since amelioration of the symptoms has followed lumbar puncture and encephalography in isolated instances, more consideration should be given to the discriminate use of these procedures as therapeutic measures. Until curative or more satisfactory symptomatic therapy is evolved it is on ephedrine sulfate that most sufferers from narcolepsy must rely.

DR. GEORGE W. HALL, Chicago. It seems to me that as Dr. Doyle has said, ephedrine is not only a therapeutic agent but to a great extent a diagnostic agent. I have tried ephedrine on different kinds of sleep without success. On the other hand at times I have given ephedrine when I have felt more sure of the presence of pathologic sleep, with results even though there were no attacks of cataplexy present. Of course it is also true that the patients may go along with somnolence for a great period of time only later to have cataplectic attacks. Still I feel that sometimes one is dealing with cataplectic attacks without somnolent attacks, and if one is not careful one will make a diagnosis of petit mal in those cases rather than of cataplexy.

## ELECTROCARDIOGRAPHIC STUDIES DURING SURGICAL ANESTHESIA

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Anesthetists have long recognized that cardiac arrhythmias were commonly encountered during surgical operations and this has led to the more extensive study of cardiac disturbances by graphic methods. A number of investigators have approached the problem from both experimental and clinical standpoints and have recorded electrocardiograms before, during and after operations under various anesthetics. The results indicate that arrhythmias, conduction disturbances and other electrocardiographic changes are of very common occurrence. Some workers have considered the results only as related to the depth and type of anesthesia, while others have endeavored to determine the effect of the operative procedure. In the present study an attempt was made to evaluate as far as possible the various factors concerned and to separate the effects due primarily to the anesthetic, and those due to operative manipulations.

### CASES STUDIED

One hundred and nine patients were studied during one hundred and thirteen surgical operations, two of the patients undergoing two separate operations and one patient three operations. All the patients were from the wards of the Wisconsin General Hospital and

varied in age from 16 to 73 years. Seventy-four patients, or 69 per cent, had no demonstrable cardiovascular lesions, while the remaining thirty-five patients, or 31 per cent, exhibited cardiac abnormalities, definite arteriosclerosis or hypertension. The following anesthetic agents were employed: cyclopropane in forty-one cases, ether in twenty, procaine in thirteen, ethylene in eleven, nitrous oxide in ten, vinyl ether in seven, chloroform in six, and tribrom-ethanol in five. With the exception of vinyl ether, this is about the proportion in which these various anesthetic drugs were regularly being employed by the anesthesia service.

The operations included all the more common surgical procedures and were divided as follows: eighteen thyroidectomies, thirty-three abdominal operations consisting mainly of appendectomies, cholecystectomies and gastro-intestinal operations, twenty-six gynecologic procedures, nineteen herniorrhaphies, and sixteen miscellaneous operations, including a three-stage resection of a diverticulum of the esophagus. Cyclopropane was the anesthetic of choice in many of the poorer risks, and consequently the majority of the patients with hypertension or heart lesions are contained in the cyclopropane group. Twenty-three of the forty-one patients operated on under this agent had some form of cardiovascular disease, while the remaining nineteen were apparently normal in this respect.

### PROCEDURE

In every instance a bedside electrocardiogram was taken the night before operation. In the majority of cases a hypodermic injection of morphine sulfate and scopolamine was given from one and one-half to two hours before operation and a second electrocardiogram was taken following the preoperative medication and immediately before the administration of the anesthetic, leads 1, 2 and 3 being taken as a routine for the first two electrocardiograms. From this point only lead 2 was recorded, tracings being taken during the period of induction and at intervals of from one to five minutes throughout the operation. An amplifying type of electrocardiograph was employed and the beam was under constant observation throughout the entire procedure. At the end of the operation a record including all three leads was taken as a routine when the anesthetic was discontinued and the patient was "coming out." Leads 1, 2 and 3 were taken the evening of the operative day, usually about ten hours following operation. In a few instances follow-up records were taken at varying intervals during convalescence. From twenty-five to forty-five electrocardiograms were taken during each operation, and in the longer procedures as many as sixty tracings were made. Each tracing was read individually, and the following data were recorded: (1) rhythm or arrhythmia, (2) rate, (3) axis deviation when all three leads were taken, (4) amplitude of QRS complexes in millimeters, (5) amplitude of T waves in millimeters, (6) position of ST segment with respect to the isoelectric line, and (7) the PR and QRS intervals in hundredths of a second. The simultaneous depth of anesthesia as noted by the anesthetist, the duration of anesthesia in minutes, and the exact step of the operative procedure were also recorded. The level of anesthesia was expressed in planes as described by Guedel.<sup>1</sup>

### RESULTS

*Types of Arrhythmia Encountered*—Figure 1 illustrates the various types of arrhythmia that were

<sup>1</sup> Because of lack of space, this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

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<sup>1</sup> Guedel, A. E. Stages of Anesthesia and a Reclassification of the Signs of Anesthesia. *Anesth. & Analg.* 6: 157 (Aug.) 1927.

encountered in the entire group and the number of cases in which each appeared. It was not at all uncommon for the same case to exhibit two or three different types of arrhythmias at one time or another. The cross-hatched bar indicates the total number of cases in which each arrhythmia occurred and the black bar indicates the number of those cases in which cardiovascular disease had been demonstrated. Partial heart

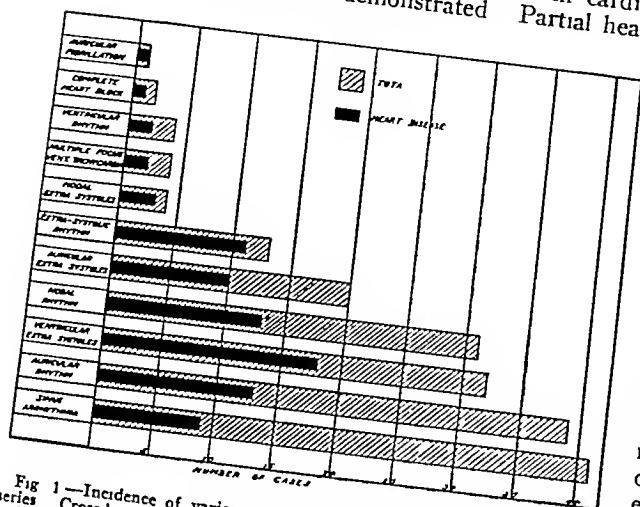


Fig 1—Incidence of various types of arrhythmias occurring in entire series. Cross hatched bars indicate total number of cases in which each arrhythmia occurred. Solid black bars indicate number of patients with heart disease.

block manifested simply by a delay in the auriculo-ventricular conduction and not by actual dropped beats occurred in eight cases (not included in figure 1). Complete heart block occurred twice and in one case was accompanied by a partial sino-auricular block. In the latter, which occurred under ether, there was a marked bradycardia (idioventricular rhythm) with some periods of asystole of seven seconds or longer. Paroxysmal auricular fibrillation was found in only one case. This occurred during a cholecystectomy under vinyl ether along toward the end of the procedure, twice with the patient under light anesthesia and once when the anesthesia was deep enough to produce respiratory arrest. The gallbladder had been removed several minutes before fibrillation appeared. The most striking arrhythmia encountered was one characterized by a series of beats arising from multiple foci in the ventricles, totally irregular and at a rapid rate, from 130 to 180 per minute. For want of a better term this will be referred to as "multiple focus ventricular tachycardia" and is illustrated in figure 5 C. In the four cases showing this type of disturbance the arrhythmia lasted from one to four minutes, after which the rhythm returned either abruptly or through stages of extrasystolic arrhythmia to normal. There was no remarkable change in the patient's general condition at the time.

It will be readily seen from figure 1 that three general types of arrhythmia predominated, namely (1) extrasystoles of various origins, (2) displaced pacemaker and (3) sinus arrhythmia. Figure 2 represents graphically the relative incidence of these three arrhythmias with respect to the anesthetic agent employed. Chloroform, vinyl ether and tribrom-ethanol in which the series were omitted from the graph owing to the fact that the percentages were not sufficiently large to make the percentages significant. The figures, however, will be found in table 1. The solid black bar

indicates the percentage of the total number of cases under each anesthetic that exhibited any type of extrasystole during the period of anesthesia. Displacement of the pacemaker downward to the auricle, auriculo-ventricular node or ventricle is designated by the second bar in each case, while the third represents the incidence of sinus arrhythmia. The white bar indicates the percentage of cases in which no arrhythmia occurred during the procedure.

Extrasystoles showed a definite tendency to constitute the predominating form of arrhythmia in the patients with abnormal hearts and this probably was a factor in the high percentage of the cyclopropane series exhibiting this type of disturbance, since more than half of these had demonstrable cardiovascular disease. In the other groups, which were predominantly composed of normal hearts, extrasystoles played a less prominent role. The ether cases showed an unusually high incidence of downward displacement of the pacemaker, and in only 20 per cent were extrasystoles found. Curiously enough, these arose in every case from the auricle or auriculoventricular node and not in a single instance from the ventricle. Displacement of the pacemaker was a prominent feature also of nitrous oxide and cyclopropane but was rarely present under procaine. The preoperative condition of the heart was apparently not a factor in this disturbance, as it occurred with equal frequency in both the normal and the abnormal hearts. Sinus arrhythmia appeared with considerable frequency under all anesthetics, particularly ethylene and nitrous oxide, but showed a definite predilection for the normal as compared with the abnormal hearts.

With the exception of procaine, the proportion of cases in which no arrhythmia occurred was below 30 per cent for each anesthetic. Two of the seven patients anesthetized with vinyl ether and one of the five patients under tribrom-ethanol remained free from

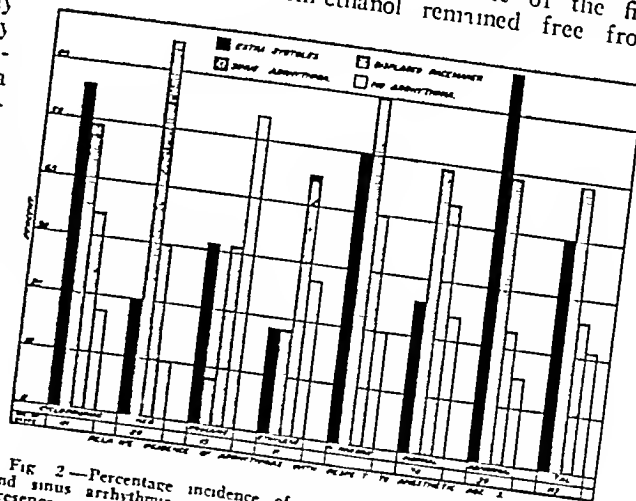


Fig 2—Percentage incidence of extrasystoles, displaced pacemaker and sinus arrhythmia with respect to various anesthetic agents and presence or absence of heart disease.

arrhythmias throughout. All six cases in which chloroform was used showed some type of disturbance. Only 10 per cent of the ether and 18 per cent of the cyclopropane cases escaped. The procaine group was conspicuous for its freedom from irregularities with 54 per cent showing no gross changes. In comparing the normal and abnormal hearts the former fared somewhat better although the difference was not great. Of the entire series, only about one fifth maintained nor-



mal rhythm throughout. Mention should be made of the fact that the ethylene and nitrous oxide groups comprised the less extensive surgical procedures.

**Relation of Arrhythmias to Type of Operation**—An attempt was made to relate the percentage incidence of the predominant types of arrhythmia to the field of operation, and figure 3 represents graphically the results of such a classification. In the thyroidectomy group extrasystoles and sinus arrhythmia were prominent, while displacement of the pacemaker was relatively uncommon. In every other type of operation, however, displacement of the pacemaker occurred very much more frequently, holding first place except in the case of the pelvic operations, in which extrasystoles exceeded slightly. The herniotomy group contained the highest percentage of cases which remained free from all disturbances of rhythm, while the pelvic operations stood at the other end of the list in this respect.

**Relation of Arrhythmias to Steps in Operative Procedure, Depth and Duration of Anesthesia**—Disturbances of rhythm were observed at all stages of the operations and were frequently noted before the incision and during preparation of the operative field. Certain procedures were perhaps somewhat more commonly associated with irregularities, notably opening and closing of the peritoneum, traction on the gallbladder or uterus, exploration of the abdominal cavity by palpation, removal of the appendix, and excision of the thyroid gland. The depth of anesthesia did not appear to be an important factor as irregularities commonly occurred during the period of induction and all degrees of anesthesia. Most of the operations were conducted under first or second plane surgical anesthesia (light or medium), and increasing the depth even to the level of respiratory arrest failed to produce any greater disturbances than were noted in the upper planes. This was done on fifteen different occasions for a period of a minute or two, and under these conditions irregularities occurred no more frequently than

perhaps slightly more common near the beginning of the operation but frequently occurred in the middle and later stages, sometimes lasting but a minute or two only to reappear after an interval. In the more marked extrasystolic arrhythmias there was a tendency for the changes to appear in a fairly uniform order. First occasional ventricular extrasystoles occurred at intervals of from five to ten beats, after which a period of

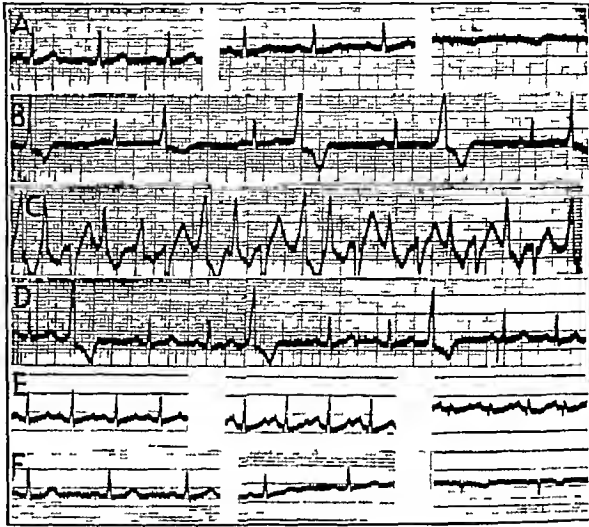


Fig 5 (case 2)—A woman aged 32 with a normal heart, had a pelvic operation under cyclopropane. There was ventricular extrasystolic rhythm at ten minutes during the preparation of the operative field, first plane anesthesia and multiple focus ventricular tachycardia at thirty-six minutes while the abdomen was being explored, first plane anesthesia. Rhythm returned to normal before the end of the operation after passing through transition stage shown in D at forty three minutes. A before operation (leads I II and III). B in first plane of anesthesia at ten minutes during preparation of field (lead II). C and D, first plane thirty six and forty three minutes respectively, exploration of abdomen (lead II). E ten hours after operation (leads I II and III). F five weeks after operation (leads I II and III).

extrasystolic rhythm<sup>2</sup> was frequently noted. This stage was followed by runs of multiple extrasystoles usually from different foci, which in the more extreme cases led to a multiple focus ventricular tachycardia or at times to an idioventricular rhythm confined to one focus and at a fairly normal rate. The return to normal rhythm was sometimes abrupt but more often went through the same changes just described, only in the reverse order.

**QRS Complexes**—Excluding the ectopic beats, the only change noted in the QRS complexes in any given case was a variation in amplitude. This was an almost constant finding and was absent in only three cases. The net change in amplitude varied from 1 mm to 8 mm, with an average of 2.2 mm in the patients with normal hearts and 2.5 mm in the series in which heart disease was present.

**ST Segment**—A demonstrable shift in the level of the ST segment at some time during the procedure was noted in 70 per cent of all the cases. This occurred with the greatest frequency under ether and cyclopropane and was least marked with procaine, nitrous oxide and ethylene. These changes were usually transient and disappeared by the end of the operation.

**T Waves**—The T wave in lead 2 underwent changes in amplitude in every case and frequently varied slightly from minute to minute. In eight cases the T wave became reversed in direction but with two exceptions

2 The term extrasystolic rhythm is here used to designate the regular recurrence of an extrasystole after each normal beat in contrast to the more common extrasystolic arrhythmia in which the ectopic beats occur quite irregularly.

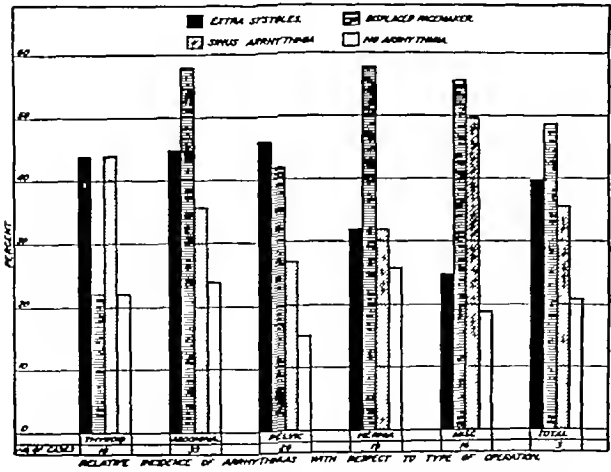


Fig 3—Percentage incidence of extrasystoles displaced pacemaker and sinus arrhythmia with respect to type of operation.

at other times. The period of recovery immediately following the discontinuing of the anesthetic was remarkably free from irregularities which was in sharp contrast to the relative frequency with which they appeared during the period of induction.

The duration of anesthesia was noted in every instance in which disturbances of rhythm occurred and no constant relationship was found. Arrhythmias were

returned to its original status during the period of recovery. The maximum variation in amplitude in any given case was 4 mm, and the average for the entire series was 1.6 mm. A few cases showed only 0.5 mm variation. No constant relationship could be demonstrated between the T wave changes and any of the conditions of anesthesia or operation.

**PR Interval**—In only four cases in the entire series did the PR interval remain constant. The remaining 109 cases showed more or less fluctuation in the auriculoventricular conduction, with a maximum net change of 0.13 second occurring in two separate cases. The average net change was slightly over 0.03 second in the normal group and slightly under 0.04 second in those cases presenting abnormal hearts, or an average

was almost invariably decreased from 1 to 4 mm. The T wave had a tendency to be increased in amplitude although it remained unchanged in about one third of the cases. In about one half of the cases the ST segment became slightly depressed from its original level.

**Comparison of Preoperative and Postoperative Electrocardiograms**—Since practically every electrocardiogram in the entire series showed one or more changes during the course of the operation, the question arose as to the promptness with which these changes disappeared. The electrocardiogram taken the night after operation (about ten hours postoperatively) was compared with the two control tracings taken before operation and the results of these observations are contained in table 2. In only five instances (4 per cent) could the

TABLE 1—Incidence of Arrhythmias Under Vinyl Ether, Chloroform and Tribrom-Ethanol in Amylene Hydrate\*

| Type of Arrhythmia  | Vinyl Ether |             |            |             |            |             | Chloroform |             |            |             |            |             | Tribrom Ethanol in Amylene Hydrate |             |            |             |            |             |
|---------------------|-------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------------------------------|-------------|------------|-------------|------------|-------------|
|                     | Normal      |             | Abnormal   |             | Total      |             | Normal     |             | Abnormal   |             | Total      |             | Normal                             |             | Abnormal   |             | Total      |             |
|                     | Num<br>ber  | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber                         | Per<br>Cent | Num<br>ber | Per<br>Cent | Num<br>ber | Per<br>Cent |
| Sinus arrhythmia    | 1           | 20          | 2          | 100         | 3          | 42          | 3          | 60          | 0          | 0           | 3          | 50          | 2                                  | 40          | 0          | 0           | 2          | 40          |
| Extrasystoles       | 2           | 40          | 1          | 50          | 3          | 42          | 2          | 40          | 1          | 100         | 3          | 50          | 1                                  | 20          | 0          | 0           | 1          | 20          |
| Displaced pacemaker | 3           | 60          | 2          | 100         | 5          | 72          | 4          | 80          | 1          | 100         | 5          | 83          | 3                                  | 60          | 0          | 0           | 3          | 60          |
| No arrhythmia       | 2           | 20          | 0          | 0           | 2          | 28          | 0          | 0           | 0          | 0           | 0          | 0           | 1                                  | 20          | 0          | 0           | 1          | 20          |
| Number of cases     | 5           |             | 2          |             | 7          |             | 5          |             | 1          |             | 6          |             | 5                                  |             | 0          |             | 5          |             |

\*Percentage is based on number of cases at foot of each column. Percentages in any one column may total more than 100 as more than one type of arrhythmia frequently appeared in the same case.

TABLE 2—Number of Cases Under Each Anesthetic in Which the Electrocardiogram Taken Ten Hours After Operation Was Found to Be Identical with Similar to, or Definitely Different from Either of the Control Tracings Taken Before Operation\*

| Anesthetic Agent                   | Identical |           |            |             | Similar |           |            |             | Different |           |            |             |
|------------------------------------|-----------|-----------|------------|-------------|---------|-----------|------------|-------------|-----------|-----------|------------|-------------|
|                                    |           |           | Total      |             |         |           | Total      |             |           |           | Total      |             |
|                                    | Normal    | Ab-normal | Num<br>ber | Per<br>Cent | Normal  | Ab-normal | Num<br>ber | Per<br>Cent | Normal    | Ab-normal | Num<br>ber | Per<br>Cent |
| Cyclopropane                       | 2         | 1         | 3          | 7           | 13      | 15        | 28         | 68          | 5         | 5         | 10         | 25          |
| Ether                              | 0         | 0         | 0          | 0           | 9       | 7         | 16         | 64          | 2         | 1         | 3          | 16          |
| Proclinal                          | 1         | 0         | 1          | 8           | 6       | 1         | 7          | 54          | 3         | 2         | 5          | 35          |
| Ethylene                           | 0         | 0         | 0          | 0           | 9       | 0         | 9          | 82          | 1         | 1         | 2          | 18          |
| Nitrous oxide                      | 0         | 1         | 1          | 10          | 1       | 1         | 2          | 60          | 3         | 0         | 3          | 30          |
| Vinyl ether                        | 0         | 0         | 0          | 0           | 5       | 1         | 6          | 66          | 0         | 1         | 1          | 14          |
| Chloroform                         | 0         | 0         | 0          | 0           | 5       | 1         | 6          | 100         | 0         | 0         | 0          | 0           |
| Tribrom-ethanol in amylene hydrate | 0         | 0         | 0          | 0           | 4       | 0         | 4          | 60          | 1         | 0         | 1          | 20          |
| Total                              | 3         | 2         | 5          | 4           | 6       | 20        | 26         | 74          | 15        | 10        | 25         | 22          |

\*The percentages are based on the total number of patients operated on under each anesthetic.

of 0.034 second for the entire series. In general these changes bore no relation to the type or depth of anesthesia or to the operative procedure.

**QRS Interval**—The intraventricular conduction as indicated by the QRS interval remained practically constant in the great majority of cases. In a very few instances there was a transient increase of from 0.01 to 0.02 second but for the most part these changes were insignificant.

**Effect of Preoperative Medication**—Approximately one and one half hours before operation the patient received a hypodermic injection of one-eighth to one-fourth grain (8 to 16 mg.) of morphine sulfate and 1<sub>200</sub> to 1<sub>100</sub> grain (0.3 to 0.6 mg.) of scopolamine or more depending entirely on the individual case. The electrocardiogram taken immediately before induction almost without exception showed certain changes as compared with the control electrocardiogram taken the night before. There was usually a definite change in rate more often an increase than a decrease. The amplitude of the QRS complex as measured in lead 2

postoperative electrocardiogram be considered as practically identical with either of the first two tracings taken. In eighty-two cases (74 per cent) the postoperative electrocardiogram was similar to but not identical with either of the control records while the remaining twenty-five (22 per cent) exhibited very definite differences with respect to one or more of the following: amplitude of the QRS complex, direction and amplitude of the T waves, position of the ST segment, axis deviation and rarely some form of arrhythmia.

**Mortality**—Of the 109 patients only three have died, and these three all had advanced carcinomas, two of them dying on the twelfth postoperative day and the third on the fourteenth. In none of these three cases could the anesthesia or the operation be blamed for the fatal outcome.

#### COMMENT

The results of these observations agree in certain respects with those of other investigators who have made comparable studies. Krumbhaar,<sup>2</sup> Lennon,

<sup>1</sup> Krumbhaar, E. B. *Electrocardiographic Observations in Thoracic Anesthesia*. *Am. J. M. Sc.* 155:175 (Feb.) 1919.

Graves and Levine<sup>4</sup> and Hill<sup>5</sup> found very much the same type of arrhythmias as noted in the present series. Frommel,<sup>6</sup> working with the guinea-pig under ether anesthesia, found coupled rhythm due to ventricular extrasystoles. Heard and Strauss<sup>7</sup> reported one case of nodal rhythm occurring under ether anesthesia but stated that "no other cases of nodal rhythm have been observed by us in a series of twenty-one cases in which electrocardiographic records have been taken during anesthesia." This results in a much lower incidence of this type of arrhythmia than found by other workers, including ourselves. Hill,<sup>5</sup> working with chloroform, ether, nitrous oxide, ethyl chloride and tribrom-ethanol in amylene hydrate found the greatest number of disturbances under chloroform, but his observations led to the conclusion that the arrhythmias were chiefly a feature of induction and tended to disappear as anesthesia was deepened. Others have felt that a rapid change in the level of anesthesia was the precipitating factor in the appearance of irregularities. Our observations would partly substantiate this view, since they were frequently seen during induction, but deepening the anesthesia failed to restore and preserve normal rhythm. Some of the most pronounced disturbances

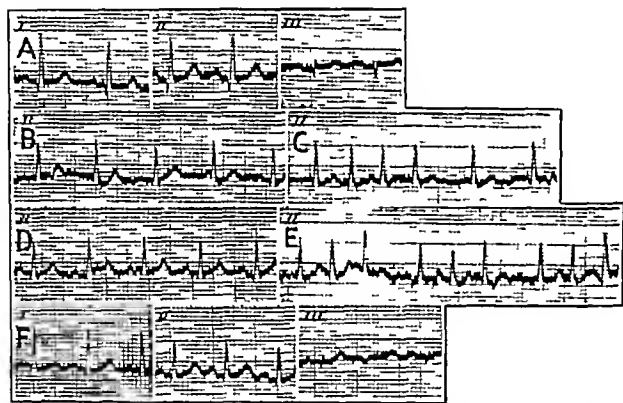


Fig 9 (case 6)—A woman aged 58 with coronary sclerosis had a cholecystectomy under vinyl ether. Paroxysmal auricular fibrillation occurred well along in the operation following removal of the gallbladder under light anesthesia. This is the only case in the series showing this arrhythmia. Uneventful recovery. A before operation. B, C and D first plane fifty two, fifty three and fifty five minutes respectively shortly after removal of gallbladder. E second plane at sixty five minutes during closing of abdomen. F at eighty-eight minutes recovery.

occurred in cases which had been kept at a uniform level of anesthesia throughout, and irregularities were just as apt to appear at twenty, thirty or forty minutes after the beginning of the operation as during induction. The period of induction in the present study was usually short, and the rapidity with which the patient was "put under" may explain the frequency of arrhythmias at this stage, as contrasted with the period of recovery, in which the changes take place more gradually.

Several attempts have been made to determine the responsibility of the surgical procedure for the appearance of arrhythmias. This presents considerable difficulty, as the anesthetic itself appears to be a potent factor in the production of cardiac disturbances.

Wachsmuth and Eismeyer<sup>8</sup> recorded electrocardiograms during surgical procedures both in dogs and in human beings and concluded that operative manipulation was of much less importance than the anesthetic in the production of cardiac irregularities. Hill noted that "In some cases slowing of the heart followed traction of the carotid vessels or interference with the recurrent laryngeal nerves. But in general, operative manipulations (opening of the peritoneum, ligation of the cystic vessels and duct, dilatation of the anal sphincter, thyroidectomy) were without influence on the heart." Maher, Crittenden and Shapiro,<sup>9</sup> in a study of eighty-nine cases during major surgical procedures, were unable to determine any constant or specific relation between the surgical procedure and the cardiac response, although extrasystoles appeared in ten cases and bradycardia in seven cases in apparent direct association with visceral stimulation. Nodal rhythm, which occurred in thirty-four of their cases, was felt to be chiefly a function of deep anesthesia. In our studies, the changes were of a similar nature, and although disturbances were frequently noted during certain surgical procedures enumerated previously, arrhythmias at other times were so common as to minimize the possibility of any direct relationship.

One case, involving a three-stage resection of an esophageal diverticulum, was of particular interest from two standpoints. First, the operation necessitated dissection of the deep structures of the neck and a certain amount of trauma in the region of the nerves closely associated with the heart. The operative manipulations might have been expected to produce definite disturbances of one kind or another, but during the course of the first operation sinus arrhythmia was the only irregularity noted, and there were no disturbances of conduction. During the third operation, at which time the diverticulum was excised, the rhythm remained normal at a rate of from 70 to 90 throughout.

The second point of interest in this case was the fact that three separate anesthetic agents were employed. The first stage was done under cyclopropane, the second stage, which involved drainage of a collection of lymph in the wound, was performed under ether, and in the third stage only procaine infiltration was used. Under cyclopropane, extrasystoles and a wandering pacemaker occurred immediately following induction and before the operation was begun, but, as previously mentioned, sinus arrhythmia was the only irregularity noted during the surgical procedure. With the same patient under ether, an auricular or nodal pacemaker was present throughout. With procaine infiltration no disturbances of any kind appeared. In a comparison of these three anesthetics as used in the same patient, the most persistent arrhythmia occurred under ether, while only transient irregularities occurred with cyclopropane and none at all with procaine.

The occurrence of "multiple focus ventricular tachycardia" in approximately 10 per cent of the patients anesthetized with cyclopropane is a circumstance that deserves careful consideration. Levy,<sup>10</sup> working with cats, observed the same type of arrhythmia under chloroform anesthesia, and in a certain number of instances this was followed by ventricular fibrillation and death. He states "Pending further light on this point it is

4. Lennox W. G., Graves R. C. and Levine S. A. Electrocardiographic Study of Fifty Patients During Operation. *Arch. Int. Med.* 30: 57 (July) 1922.

5. Hill I. G. W. The Human Heart in Anesthesia. *Electrocardiographic Study*. Edinburgh M. J. 32: 533 (Sept.) 1932.

6. Frommel E. *Arch. des mal. du cœur* 20: 705 (Nov.) 1927.

7. Heard J. D. and Strauss A. E. A Report of the Electrocardiographic Studies of Two Cases of Nodal Rhythm Exhibiting RP Intervals. *Am. J. M. Sc.* 135: 233 (Feb.) 1918.

8. Wachsmuth W. and Eismeyer G. Heart Action As Affected by Operative Procedures. *Deutsche Ztschr. f. Chir.* 209: 145 1928.

9. Maher C. G., Crittenden P. J. and Shapiro P. F. Electrocardiographic Studies of Viscerocardiac Reflexes During Major Operations. *Am. Heart J.* 9: 664 (June) 1934.

10. Levy A. G. The Genesis of Ventricular Extrasystoles Under Chloroform with Special Reference to Consecutive Ventricular Fibrillation. *Heart* 5: 299 1914.

possible to make the important statement that in every single instance of ventricular fibrillation induced under chloroform by any of the methods I have employed, it has been preceded by a stage of complex ventricular irregularities, and that unquestionably the one condition leads to the other, whatever their relationship may be." Seevers, Meek, Rovenstine and Stiles<sup>11</sup> in some experimental work with high concentrations of cyclopropane, made the observation that "two dogs died with ventricular fibrillation, occurring after short runs of ventricular extrasystoles and tachycardia." Hill,<sup>6</sup> in a clinical study, noted the same type of ventricular disturbance in seven cases under chloroform anesthesia and published an illustrative electrocardiogram which shows a ventricular mechanism identical with that recorded in our four cases. Ventricular fibrillation has been offered as the explanation for the cases of sudden death occasionally occurring during induction with chloroform, and although definite proof in clinical cases is lacking, an arrhythmia which experimentally has been found to be a precursor of fatal ventricular fibrillation should be regarded, at least for the present, as having serious potentialities.

The problem that directly concerns the anesthetist is the means of detecting the presence of such an arrhythmia at the operating table. Checking back on the anesthetist's operating room record in the four cases in question, a total arrhythmia or "irregular irregularity" was noted in three of the patients at the time the electrocardiogram recorded the ventricular disturbance. The recorded pulse rate was from 30 to 100 points lower than the actual heart rate probably owing to the fact that many of the beats did not propagate a pulse to the periphery. In the fourth case the disturbance was of short duration and was not picked up by the anesthetist. In general it may be stated that any total irregularity of the pulse as to both time and force at an abnormally rapid rate, 100 or over, should excite suspicion, for it usually indicates one of two conditions, auricular fibrillation or multiple focus ventricular tachycardia, both of which are to be regarded as serious in a heart that has been beating regularly.

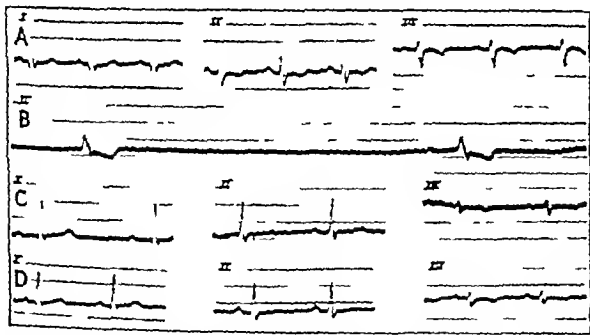


Fig 11 (case 9)—A woman aged 61 with coronary sclerosis had a laparotomy under ether. Complete heart block and sino-auricular block with ventricular rate of 15 twenty nine minutes after induction during exposure of gallbladder in second plane of anesthesia. Lasted five minutes and did not recur. Uneventful recovery. A before operation. B second plane twenty nine minutes exposure of gallbladder. C PR 0.25 second in first plane at seventy-one minutes during closing of abdomen. D ten hours after operation.

The fact that all four of the cases exhibiting this type of disturbance occurred under cyclopropane raises the question as to the risk that attends its employment as a routine anesthetic. In the first place the present

series of forty-one cases is too small to warrant any conclusions and a larger series might greatly reduce the percentage incidence. In the second place definite proof is lacking that ventricular fibrillation has ever been precipitated by this drug in man. The presence of other hydrocarbons as contaminants in commercial cyclopropane must be considered as a possible explanation.

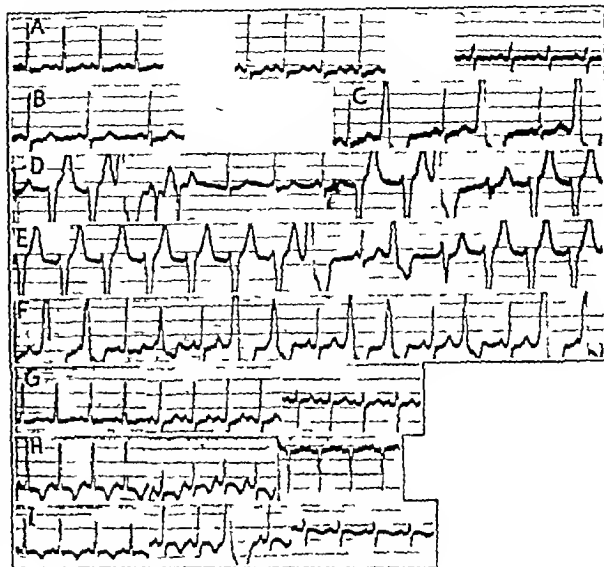


Fig 13 (case 13)—A woman aged 48 with hypertension had a thyroidectomy under cyclopropane. Ventricular extrasystolic rhythm toward end of induction was followed a few minutes later by runs of ventricular extrasystoles then a short period of ventricular rhythm at a rate of 100 before incision. Five minutes later during dissection of thyroid multiple ventricular extrasystoles occurred. First postoperative electrocardiogram shows sharp inversion of T<sub>1</sub> and T<sub>2</sub> which were upright before operation. Six days after operation T wave had not returned to upright position. The patient was bedridden when last heard from ten weeks after operation. A before operation (leads I II and III). B induction at 2½ minutes (lead II). C induction at four minutes (lead II). D first plane at nine minutes before incision (lead II). E same as D, F first plane fourteen minutes dissection of thyroid rate 110 (lead II). G recovery at fifty minutes (leads I II and III). H ten hours after operation (leads I II and III). I note inverted T<sub>1</sub> and T<sub>2</sub> six days after operation (leads I II and III). T<sub>1</sub> and T<sub>2</sub> still inverted.

tion of the relatively high incidence of apparently serious arrhythmias.

The value of cyclopropane for the present, will have to be judged by its properties as an anesthetic and the associated incidence of postoperative complications as compared with other agents. From this point of view the evidence is entirely in favor of cyclopropane, and it is felt by those most familiar with it that its use is accompanied by fewer unfavorable postoperative reactions and that in general it is a safer anesthetic, even in poor surgical risks than most other drugs in general use at present.

The physiology or mechanism of the cardiac disturbances seen during surgical anesthesia is an interesting question. There is general agreement that stimulation of the vagus nerve is an important factor not only in inhibiting the normal pacemaker and forcing lower centers to assume this function but also in slowing the rate and permitting or encouraging escape mechanisms and extrasystoles. There must, however, be another factor which stimulates and increases the irritability of the myocardium to account for the rapid and irregular action originating below the sino-auricular node in a fair percentage of cases. The direct action of the anesthetic drug itself may be the explanation but further investigation will be necessary to settle this question.

Another important phase that demands special study is the question of the significance of the changes noted

11 Seevers, M. H., Meek, W. J., Rovenstine, F. A. and Stiles, J. A. Study of Cyclopropane Anesthesia with Special Reference to (a) Concentrations, Respiratory and Electrocardiographic Changes. J. Pharmacol. & Exper. Therap. 51: 1 (May) 1934.

in the QRS complexes, ST segments and T waves of the electrocardiogram. Do these indicate myocardial damage? Are they permanent or transient and, if transient, how long do they remain? The profound changes shown by the electrocardiogram in the great majority of cases under surgical anesthesia leave no doubt that the heart is directly affected, but the nature, extent and permanence of the changes remain undetermined. It is hoped that further light may be thrown on this phase of the subject in the near future.

#### SUMMARY

Electrocardiographic studies were made on 109 patients during 113 surgical operations under various anesthetic agents as follows: cyclopropane forty-one, ether twenty, procaine thirteen, ethylene eleven, nitrous oxide ten, vinyl ether seven, chloroform six and tribrom-ethanol in amylene hydrate five. Electrocardiograms were taken as a routine before operation, at frequent intervals during the surgical procedure, during recovery, and ten hours after the operation.

Disturbances of rhythm constituted the most striking changes noted, sinus arrhythmia, extrasystoles and downward displacement of the pacemaker predominating. A rapid and totally irregular ventricular action, apparently never recorded except under anesthesia, occurred in four cases. Complete heart block was found twice and paroxysmal auricular fibrillation once. Arrhythmias appeared more frequently in abnormal than in normal hearts. The lowest incidence of arrhythmias occurred with procaine and the highest with chloroform. Of the entire series, only 21 per cent failed to show some type of disturbance. No constant and specific relationship could be established between the occurrence of arrhythmias and the depth of anesthesia or the steps in the surgical procedure.

Variations in the amplitude of the QRS complexes and T waves, shifting of the ST segment and changes in the PR interval occurred in the majority of cases and for the most part were of a transient nature.

In a large percentage of cases the electrocardiogram taken ten hours after operation differed in certain respects from the control tracings, and further work will be required to determine the persistence and significance of these changes.

#### ABSTRACT OF DISCUSSION

DR. E. A. ROVENSTINE, New York. Although this contribution is greatly appreciated it adds to our already complicated problems. The authors have pointed out the possibility of the frequent interference with circulation in the majority of anesthetics and the dangers inherent to the drug that is used. These dangers have long since been proved with certain anesthetics but other agents have generally escaped this stigma. What concerns the anesthetist particularly is a means of detecting arrhythmias without an electrocardiograph in the operating room and what to do in the presence of one. The pulse rate cannot suffice for diagnosis because a great many beats will not propagate a peripheral pulse. The pulse rate is affected by hemorrhage and want of oxygen which may be present. While using cyclopropane it has been felt that any irregularity of the pulse as to time or force with a rate of 100 or more is a sign of danger and suggests auricular fibrillation or ventricular tachycardia. It is also felt that any sudden change in the rate unless it is in the presence of want of oxygen or hemorrhage is an indication of impending danger. I should like to know whether there are any other means of detecting impending danger. The electrocardiographic observations with cyclopropane certainly render a further study of this drug necessary. There is no definite indication or no definite instance of ventricular fibrillation in man but serious arrhyth-

mias do occur. In their original experiments on animals, Henderson and Lucas found irregularities of the heart beat in their blood pressure tracings, and one of the earliest clinical observations at Wisconsin was the presence of arrhythmias. This observation of their presence led to an electrocardiographic study on dogs. It was concluded that cardiac arrhythmias occurred with high concentrations of cyclopropane and further, that the agent was sufficiently toxic to produce cardiac paralysis, even in the presence of artificial respiration and adequate alveolar oxygen tension. Before condemning cyclopropane, one must consider its purity and stability. The drug is manufactured from trimethylene bromide reduced by metallic zinc. If the reduction is incomplete or the process faulty, trimethylene bromide or a halogen may become a contaminant with effects similar to those of other halogens. The present popular method of separating cyclopropane from propylene by shaking over a permanganate has been criticized and no entirely satisfactory method of determining one in the presence of the other has been reported.

DR. LEWIS M. HURVITZ, Boston. It seems to me that the question is not whether irregularities occur or what causes them particularly, but whether the patient gets through the operation, whether the irregularities disappear and whether there is any noticeable after-effect as the result of their appearance in conduction, in pacemaker and in rhythm. The important question is how the anesthetic is given and not the minor changes that may occur during anesthesia. From 95 to 99 per cent of all these patients do get through their anesthesia and are all right afterward as far as their heart is concerned. Too much attention should not be focused on electrocardiographic changes, but attention must be focused on the patient to show whether he is in shock, has difficulty in breathing or gives any evidence of the heart failing, as the result of anesthesia. The manipulation of the abdominal organs, to me is of interest because it confirms or partly agrees with the clinical observation that irregularities of the heart are often associated with pathologic changes of the upper part of the abdomen. All these irregularities, as the authors point out, can come from anoxemia or vagus disturbances, and it was interesting to me, particularly, to note that there were just as many present with cyclopropane, when there was a large concentration of oxygen, as were present with the other anesthetics. Was there any correlation between the appearance of cardiac irregularities and the drop or the level of blood pressure?

DR. MILTON J. RAISBECK, New York. I have been very much interested in seeing these electrocardiograms, because they have the advantage of giving direct insight into what is going on in the cardiac muscle. There is one fact that cannot be escaped. Any one who has had experience with animal experimentation knows that when he has produced ventricular tachycardia he is just on the verge of producing ventricular fibrillation. Records of ventricular fibrillation are not obtained in man because the patient dies before the making of such a record is possible. The only chance to secure such records is in the experimental animal in which a toxic drug is being pushed up to the point of death. Even though ventricular fibrillation has not been demonstrated in man because electrodes cannot be placed quickly enough so that the record can be made this is not a reason for assuming that the mammalian heart in spite of differences from one animal species to another does not show fairly constant behavior along certain lines. This means that cyclopropane may involve dangers that must be faced at least in cardiac cases if not in others, in concentrations that apparently are necessary or are used in the current practice of anesthesia. In discussing the preceding paper I said that I did not know much about cyclopropane. I feel that I know a little more now and my impression is that ethylene may have certain points in its favor until cyclopropane can get out from under the suspicions aroused by this study. I believe that this contribution adds an element of great precision to clinical observations. One may have one's opinions about what is going on but with electrocardiograms one knows exactly what is taking place in the cardiac muscle as far as mechanism is concerned and that certainly is important.



DR. CHESTER M. KURTZ, Madison, Wis. I am grateful for the helpful discussions. The question has come up whether any epinephrine was used in the procaine when given intraspinally or when used for regional block. Each hundred cc. of the procaine solution contained 1 cc. of 1:2,600 epinephrine. No relationship between blood pressure and electrocardiographic changes was demonstrated. This, of course, is necessarily a preliminary study, and it has opened up several avenues for further investigation. A number of questions have arisen needing clarification and considerable work will have to be done before the exact significance of the observations are understood.

## NERVOUS COMPLICATIONS FOLLOWING SPINAL ANESTHESIA

A CLINICAL STUDY OF SEVEN CASES, WITH  
TISSUE STUDY IN ONE INSTANCE

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The subarachnoid injection of cocaine derivatives for surgical analgesia has become an accepted and frequent procedure except in cases of severe myocardial degeneration, hypertension or psychoneurosis. The spinal anesthetic is easily administered, it eliminates the restlessness and excitement of the preanesthetic stage of ether, and it produces a greater degree of muscular relaxation. Moreover, spinal anesthesia has been repeated within short periods of time in the same individual without ill effects. Thus, Sullivan<sup>1</sup> records an instance in which five spinal anesthetics were given within thirty-eight hours.

A priori one might hesitate to bathe the spinal cord and roots in a fluid that has been demonstrated experimentally to have toxic effects on neural tissue. In 1908 Spielmeier<sup>2</sup> injected stovaine (amylolaine hydrochloride B.P.) into the subarachnoid spaces of dogs and apes and later found degeneration of the roots and the peripheral portion of the cord and retrograde changes in the anterior horn cells. Recently Davis and his co-workers<sup>4</sup> showed that the spinal anesthetics in common use were both hemolytic and myelolytic, furthermore when injected into dogs the spinal anesthetics produced an aseptic meningeal reaction with an exudation of plasma cells and proliferation of arachnoidal cells which later resulted in a thickening of the meninges. There was also disintegration of the axons and degeneration of the peripheral portion of the cord. Lindemulder<sup>7</sup> described similar degenerative changes in the spinal cord and nerve roots in patients dying soon after the administration of spinal anesthetics.

The work of van Lier<sup>8</sup> and Wossidlo<sup>9</sup> is of prime importance. Wossidlo injected amylolaine hydrochloride

into the subarachnoid space of rabbits. The lumbar cords were examined from one to twenty-four hours later. There were chromatolysis and swelling of the cells, scarcely any normal cells were found in the anterior horns after two hours. Improvement was noticed after six hours and the cells were normal again after twenty-four. These experiments prove that cocaine derivatives have toxic effects on neural tissue. Fortunately, this is usually a rapidly reversible reaction and recovery from the anesthetic is quick and complete. However, under unknown conditions the toxic reaction may not regress, permanent damage to the nerve structures then ensues.

Neurologic disturbances following the use of spinal anesthesia have often been recorded. However, there is much difference of opinion as to their frequency. Foss and Schwalm<sup>10</sup> state that in 3,000 cases they have never seen "the slightest evidence of peripheral neuritis or sensory or motor disturbances." They quote Pemberton to the same effect. On the other hand, Lindemulder,<sup>7</sup> Hyslop,<sup>11</sup> Smith<sup>12</sup> and others have recorded definite instances of neural disease following the administration of a spinal anesthetic. Hyslop gives 0.5 per cent as the incidence of sequelae in the central nervous system. Jarman<sup>13</sup> gives 0.01 per cent as the frequency of "paralyses." Nervous complications of the most varied types follow the use of spinal anesthesia. Among isolated cranial nerve paralyses, unilateral or bilateral abducens palsy is the most frequent, trigeminal, facial, auditory and hypoglossal nerve involvement has also been recorded. Lesions of the cauda equina, myelitis, aseptic meningitis and meningoencephalitis have been described. Almost any part of the central nervous system and even the entire central nervous system may be affected. The complications may be permanent if not fatal. These facts point to the need of limiting the use of subarachnoid injection to those special cases in which general anesthesia is too dangerous.

In this paper we are reporting seven personally observed instances of neural complications following spinal anesthesia with tissue changes in the spinal cord in one case.

CASE 1.—M. B., a man aged 22 entered the hospital Jan. 14, 1932, for a bilateral herniotomy. Two cubic centimeters of a preparation of procaine with strychnine sulfate was injected between the fourth and fifth lumbar vertebrae. The course was febrile for the next twenty-one days: from 100 to 101 F. for the first four days, from 102 to 104 F. for the next two days, and from 100 to 102 F. for the following three days. The fever rose to 105 F. on the tenth day. For the next three days it hovered about 104 F. with a gradual return to normal by lysis on the twenty-first day after operation. The pulse ranged from 80 to 116 during this period. The blood pressure ranged from 124 systolic 70 diastolic to 136/92.

There were no complaints other than malaise and anorexia. For the first ten days the nature of the illness was not clear. Typhoid was considered but a Widal test was negative. On the eleventh postoperative day rigidity of the neck, haziness of the optic disks and vomiting made their appearance and a diagnosis of meningitis was made. This was substantiated by the spinal fluid changes. There were no signs of a focal lesion in the central nervous system at any time. Improvement began about the sixteenth day and by the twenty-second day the patient was

Because of lack of space this article is abbreviated in THE JOURNAL. The complete article appears in the authors' reprints.

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Read before the Section on Nervous and Mental Diseases at the Eighty-Sixth Annual Session of the American Medical Association, Atlantic City, N. J., June 14, 1935.

<sup>1</sup> Sullivan, W. M., Jr. Observations on a Patient to Whom Spinal Anesthesia Was Administered Five Times Within Thirty-Eight Hours. *J. A. M. A.* 90:993 (Sept. 17) 1932.

<sup>2</sup> Spielmeier, W. Veränderungen des Nervensystems nach Stovain. *Anaesthesie München med. Wchnschr.* 55:129, 1908.

<sup>4</sup> Davis, Loyal Haven Hale, Givens, J. H. and Emmet, John. Effects of Spinal Anesthetics on the Spinal Cord and Its Membranes. *J. A. M. A.* 88:1781 (Dec. 12) 1931.

<sup>7</sup> Lindemulder, F. G. Spinal Anesthesia. *J. A. M. A.* 99:210 (Feb. 10) 1932.

<sup>8</sup> van Lier, E. H. Histologisch-Beitrag zur Rückenmarksanästhesie. *Beitr. z. klin. Chir.* 54:413, 1907.

<sup>9</sup> Wossidlo, F. Experimentelle Untersuchungen über Veränderungen der nischen Granula bei der Lumbalanästhesie. *Arch. f. klin. Chir.* 94:101, 1938.

<sup>10</sup> Foss, H. L. and Schwalm, L. J. Relative Merits of Spinal and Ether Anesthesia. *J. A. M. A.* 101:1711 (Nov. 25) 1933.

<sup>11</sup> Hyslop, C. H. Spinal Anesthesia. Nervous System Sequelae. *Surg., Gynec. & Obst.* 57:799 (Dec.) 1933.

<sup>12</sup> Smith, W. A. Neurologic Hazards of Spinal Anesthesia. *J. A. M. A.* 92:22, 29 (Aug.) 1933.

<sup>13</sup> Jarman, R. Recent Advances in Anesthetics. *Brit. J.* 1:794 (May 5) 1934.

definitely convalescent. He was discharged from the hospital on the forty-fifth day following operation. The spinal fluid showed a mononucleosis beginning with 560 cells.

In this case an acute benign lymphocytic meningitis with a high sugar content in the spinal fluid developed slowly but directly after the use of spinal anesthesia. At no time was the patient very ill, recovery was complete. The case bears a close resemblance to the type of acute benign lymphocytic meningitis recently described by Abramson<sup>14</sup>.

**CASE 2**—B T, a youth, aged 19 entered the hospital June 12, 1934, for an appendectomy. An acutely inflamed appendix was removed under spinal anesthesia, 105 cc. of a 1:500 solution of nupercaine (Jones solution) was injected between the second and third lumbar vertebrae.

Three hours after the operation the patient became comatose. The temperature was 104 F, the pulse rate was increased and respirations were normal. There was rigidity of the neck, an overactive right knee jerk and a positive left Babinski toe sign. Twenty-four hours after the operation the temperature returned to normal and remained so for three days. During this interval the patient was restless and noisy, he slept intermittently under sedation but complained of excruciating headache, temporarily relieved by lumbar puncture. On the fourth postoperative day

the headache became agonizing, she vomited, and generalized weakness and occasional urinary and fecal incontinence developed. On the twenty-third day she reentered the hospital, acutely ill. She was dull and restless, the neck was stiff and a bilateral Kernig sign was found. The optic disks were hazy in outline. The deep reflexes were overactive, the left more so, bilateral Babinski toe signs were elicited. The blood pressure was 152 systolic 108 diastolic. In the next forty-eight hours her lethargy deepened to coma. The right pupil was larger than the left, and both reacted sluggishly. Automatic movements of the upper and lower extremities were noted with a tendency to postural fixations of the extremities (catatonia). On the twenty-fifth postoperative day examination disclosed stupor, generalized weakness, incontinence, absence of corneal reflexes, right peripheral facial weakness, a diminution of the palatal reflexes, double Babinski toe signs, and absent abdominal reflexes. The blood pressure was 136 systolic, 100 diastolic. On the twenty-seventh day, left ptosis, weakness of the left external rectus muscle and inconstant skew deviation of the eyes were noted. On the thirtieth day improvement began. During her second stay in the hospital a febrile reaction of from 100 to 102 F was noted from the twenty-fifth to the thirtieth postoperative day.

April 9, 1934, nineteen months later, her physician stated that she was much improved and was up and about doing her house work, and that the ocular muscle weakness was almost entirely gone but that her speech was a bit defective.

This case presented the clinical picture of a polioencephalitis of such severity that for a number of days the patient was regarded as dying. A slow improvement set in nineteen months later she still had residual signs.

**CASE 4**—B B, a man aged 56, underwent a first stage prostatectomy on Dec. 9, 1932. December 21, the second stage was performed. Both procedures were carried out under spinal anesthesia, 100 mg. of procaine hydrochloride being injected between the third and fourth lumbar vertebrae on both occasions. Three weeks later (Jan. 15, 1933) severe radiating pain appeared in both groins, the scrotum and the testicles. The pain was much increased by walking. February 8 paravertebral block was resorted to for relief. Quinine and urea hydrochloride was injected in the region of the first and second lumbar roots, the patient was

relieved for seventy-two hours. February 12 the severe pain recurred.

We saw him for the first time on February 13, seven weeks after the second spinal anesthesia, at this time the pains in the groin were most marked especially on the right. They were aggravated by movement of the lower extremities. Examination disclosed diminution of the ankle and knee jerks and equally active abdominal reflexes. There was no Babinski toe sign. The appreciation of pain and temperature was diminished in the area of supply of the anterior branches of the twelfth thoracic and first lumbar nerves on the left. The second lumbar and the first sacral spines were tender. Diathermy afforded no relief and on March 1 paravertebral block was again tried with injection of the first and second lumbar roots. On this occasion a mixture of 2 cc. of 5 per cent procaine hydrochloride and 2 cc. of 95 per cent alcohol was used. Relief followed for twenty-four hours. Then anesthesia appeared in the lower extremities and trunk as high as the umbilicus. This numbness receded in a few hours to the level of the second lumbar dermatome. The original inguinal pain persisted and about two weeks later a burning pain appeared in the lumbar region. At this time neurologic examination disclosed diminution of the right lower abdominal reflex, diminished knee and ankle jerks and an area of lessened sensibility extending from the eighth thoracic to the second lumbar dermatomes. By May, five months later, atrophy of the left quadriceps muscle was evi-

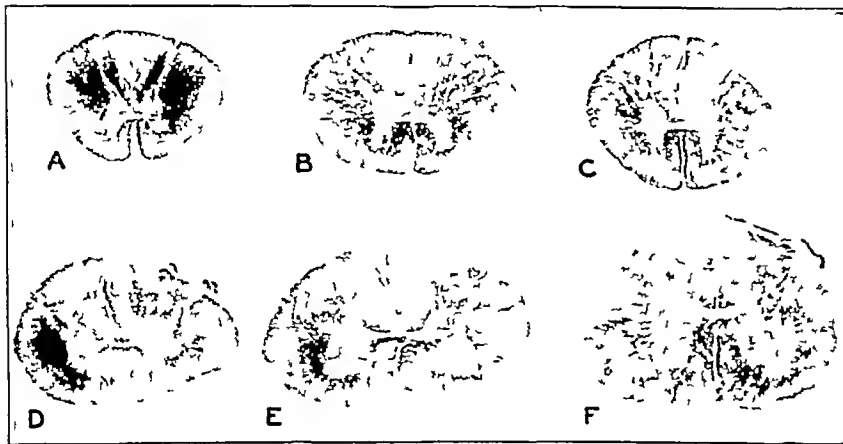


Fig. 1.—Transverse sections of the cord through the thoracic lumbar and sacral segments showing demyelination of most of the fiber tracts in the region of the ninth thoracic (B), first sacral (C), third lumbar (D), and first sacral (E). The demyelination is most marked in the posterior columns and in the periphery of the cord segment (A) simply shows an ascending degeneration. Myelin sheath stain.

there was a sharp rise in temperature to 104 F, the pulse was 82 and respiration rate 22. A neurologic examination showed a rigid neck, a bilateral Kernig sign, absence of the right knee jerk, ankle jerks and lower abdominal reflexes and bilateral Babinski toe signs. On the fifth postoperative day the temperature returned to normal and continued so until his discharge from the hospital eleven days after the operation. One month after his discharge the results of a neurologic examination were negative. The spinal fluid showed a polynucleosis beginning with 3,200 cells.

In this case a severe meningitis characterized by polynucleosis and disappearance of sugar from the spinal fluid speedily followed spinal anesthesia. Recovery was rapid and complete.

**CASE 3**—R. C. a housewife aged 44 was operated on Sept. 20, 1932 under spinal anesthesia. 24 cc. of a preparation of procaine with strychnine sulfate was injected between the second and third lumbar vertebrae. A hysterectomy, appendectomy and bilateral salpingo-oophorectomy were done.

On the third day after operation severe headaches made their appearance which persisted until the fourteenth postoperative day when she was discharged from the hospital. On the eighteenth day after operation following an automobile ride,

<sup>14</sup> Abramson, J. L. Acute Lymphocytic Meningitis. *Arch. Neurol. & Psychiat.* 31:1235 (June) 1934.

dent The right knee jerk was diminished and the left absent, the ankle jerk on the right was fairly active the left less so. The upper abdominal reflexes were present the lower absent. Weakness of the lower abdominal muscles caused pouching of the lower part of the abdomen. He was last seen in April 1934, sixteen months later. He had made great improvement and

thirty-sixth postoperative day signs of severe, acute cholecystitis developed, operation was deemed necessary. There had been no neurologic complaints following the first spinal anesthesia. On the thirty-seventh day after the first operation, a cholecystectomy and drainage were done under spinal anesthesia. Again, the anesthesia used was 10 cc. of a 1:500 solution of nupercaine, which was injected between the first and second lumbar vertebrae. On the first postoperative day the patient complained of being unable to move both lower extremities. On the second postoperative day a decubitus ulcer appeared in the upper portion of the intergluteal cleft. Examination disclosed paralysis of the left lower extremity with foot drop, paresis of the right lower extremity, absent knee and ankle jerks, an equivocal right Babinski toe sign and hypalgesia of the perianal region and of the left lower extremity, more pronounced in the lumbar segments. There was retention of urine and incontinence of feces. On the fourth postoperative day, examination showed a level at the sixth thoracic dermatome below which there was involvement of all types of sensation more on the left than on the right, with bilateral perianal analgesia and anesthesia, paraparesis with greater motor weakness on the left, absent knee and ankle jerks and an equivocal right Babinski toe sign. There was in addition an extensive sacral decubitus. On the ninth postoperative day two areas of diminished sensation could be made out, one from the sixth thoracic dermatome to the third lumbar on the left and a second from the first sacral to the coccygeal dermatomes bilaterally. In other respects the examination was unchanged. Two months after the second operation examination showed profound symmetrical wasting of the muscles of

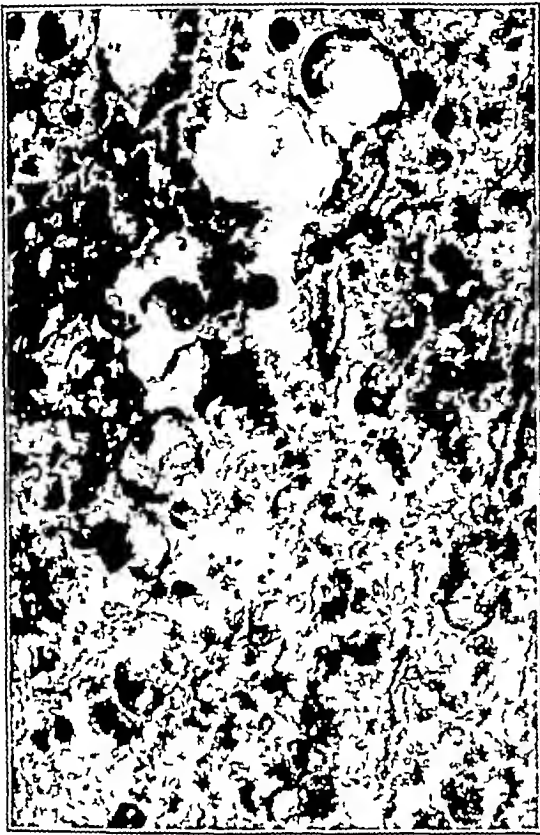


Fig. 2—Longitudinal section of the cord showing destruction and swelling of the myelin sheaths. myelin sheath stain  $\times 400$

was able to work. He still complained of very transient attacks of "pins and needles" and pain radiating from the knees to the groins, more marked on the left side. There was constant slight pain in the left groin. Some urgency and frequency of urination persisted, difficulty in defecation due apparently to weakness of the lower abdominal muscles was also present. The knee jerk was still diminished on the right and absent on the left. The ankle jerks were equal. The middle and lower abdominal reflexes were absent. A partial return of power was noted in the quadriceps muscle. However, he was unable to arise from the squatting position. Sensation was still defective from the twelfth thoracic to the second lumbar dermatomes.

This case presented a syndrome of radiculitis following spinal anesthesia. Unfortunately, the paravertebral injections accentuated the root pain and produced signs of mild cord involvement.

CASE 5—I L., a housewife, aged 34 entered the hospital June 18 1934 and under spinal anesthesia a supravaginal hysterectomy, a right oophorectomy and a bilateral salpingectomy were performed. Eleven cubic centimeters of a 1:500 solution of nupercaine was injected between the second and third lumbar vertebrae.

On the seventh postoperative day she suddenly lapsed into coma. The blood sugar was 400 mg. the urine was strongly positive for sugar and acetone and the carbon dioxide combining capacity of the blood was 26.7 volumes per cent. A preoperative examination of the urine and the history had been negative for diabetes mellitus. The latter which appeared postoperatively was readily controlled with insulin and diet and the patient made an uneventful recovery. However on the



Fig. 3—Longitudinal section of the cord showing destruction of axon cylinders. Bielchewsky method  $\times 400$

both lower extremities. The sensory changes persisted. Three months after the second operation there was some improvement in power. She could now raise the limbs off the bed, flex the knees and abduct and adduct the thighs. The movements were executed with great unsteadiness and coarse tremor. The sensory reflex and sphincter disturbances were unchanged. From repeated catheterization the patient developed a bilateral

infected hydronephrosis and for two weeks had a septic temperature, ranging from 100 to 104 F, the rise being accompanied occasionally by a chill. The insertion of a permanent catheter and the administration of urinary antiseptics relieved this condition. Five months after the second operation she could walk about thirty paces with assistance.

This patient was given the same spinal anesthetic on two occasions. Following the first, no neurologic ill effects were noted. Twenty-four hours after the administration of the second spinal anesthetic signs of a severe cauda equina neuritis developed together with an apparently independent focus of myelopathy in the thoracic cord. She is slowly recovering.

The development of the diabetes mellitus needs special comment. It should be emphasized that a urinary examination and the history before the first



Fig 4—Longitudinal section of the cord showing poor gliosis. Holzer method.  $\times 200$

operation were negative. The subsequent rapid appearance of the diabetes is difficult to explain. However, the absence of pain and weakness in the lower extremities and the presence of active knee jerks before the second operation as well as the type of acute radiculomyelopathy that developed after the second operation suffice to rule out diabetes as a causative factor in the neurologic condition that followed the second spinal anesthesia.

CASE 6—A man aged 54 was seen by a physician in March 1929 because of melena, tenesmus and diarrhea alternating with constipation. These symptoms continued until September 1930 when a bandlike pain in the right lumbar region appeared the pain radiating anteriorly. October 27 an exploratory operation was undertaken. Spinal anesthesia was used. As soon as the drug was injected he experienced severe pain radiating down the lower limbs. The pain was so intense that general anesthesia

had to be employed. Adhesions were found between the omentum and the lower anterior abdominal wall compressing a loop of small intestine, diverticulitis of the sigmoid was also discovered. Directly after recovery from the general anesthesia the severe pain in the lower extremities continued and weakness in the lower limbs appeared. On two or three occasions in November he had hematuria. We saw him in February 1931 four months after the operation, complaining of pain and weakness in the lower extremities tenderness in the region of the anus, impaired sphincteric control, unsteadiness in gait and loss of weight (42 pounds, or 19 Kg). Examination at this time showed weakness of the right lower extremity, depressed knee jerks and very much diminished ankle jerks, and loss of the lower abdominal reflexes. There was a double Lasègue sign, and it was noted that coughing and sneezing caused pain in the lower limbs. There was a diminution of pain and temperature sensation up as far as the tenth thoracic dermatome. At that time spinal fluid examination showed no block and was normal except for the colloidal gold curve, which was 4432100000. A diagnosis of cauda equina neuritis was made. However, the loss of the lower abdominal reflexes and the level of sensory change to the tenth thoracic dermatome indicated slight cord involvement. He came under observation again in March 1933, twenty-nine months after operation. The pain had continued without remission and of late had increased. He could hardly walk. Incontinence of urine had become a prominent feature. The lower extremities were somewhat spastic. There was generalized muscular atrophy and weakness in the lower extremities, especially below the knees, with bilateral foot drop. The knee jerks were now overactive, the ankle jerks were absent, and equivocal bilateral Babinski toe signs were noted. All forms of sensation were diminished below the first lumbar dermatome. The lower extremities also showed a degree of overreaction to painful stimuli (hyperpathia). Vibration and position and joint sense were absent in the right lower extremity and diminished in the left. Evidence of spinal automatism and relaxation of the anal sphincter were also found. He was next seen in May 1933, thirty-one months after operation. In April 1933 paravertebral block had been undertaken for the relief of pain in the lower extremities, it was unsuccessful. In his attempt to relieve pain he had become addicted to the use of morphine. At this time the signs of transverse "myelitis" had progressed. Chordotomy was performed May 10 following which the pain disappeared. The surgeon, Dr L. M. Davidoff noted that the cord presented the appearance of intramedullary disease. Four days after the chordotomy pneumonia developed from which he recovered. Later, infection of the genito-urinary tract set in. He died, July 25, thirty-three months after the original operation.

This patient presented a cauda equina "neuritis" with mild cord involvement. He was first seen four months after the administration of the spinal anesthetic. In the next twenty-nine months the clinical picture of a transverse "myelitis" and "radiculitis" developed which ultimately proved fatal.

CASE 7—M. G. a man, aged 47 entered the hospital Oct 3, 1934 in a state of shock. He had been struck a hard blow in the abdomen by the rebounding handle of a freight elevator. The abdomen was distended and the anterior abdominal wall was rigid and exquisitely tender. The blood pressure was 170 systolic, 90 diastolic, the temperature 101.6 F., the pulse 96 and the respiration rate 26. A blood count showed 14,700 white blood cells with 88 per cent polymorphonuclear leukocytes. An exploratory laparotomy was performed under spinal anesthesia. Ten cubic centimeters of a 1:500 solution of nupercaine was injected between the second and third lumbar vertebrae. No abdominal lesion was disclosed. Three days after the operation the patient complained of paralysis and numbness of both lower extremities. On the fifth postoperative day examination showed a flaccid paraplegia in flexion, loss of knee and ankle jerks, absent cremasteric reflexes and a level at the twelfth thoracic dermatome below which the appreciation of pain, touch, temperature, vibration and joint position sensations were lost. Between the tenth and twelfth thoracic dermatomes there were hyperalgesia and hyperesthesia. Retention of

urine and feces was present. On the sixth postoperative day, bedsores appeared in the intergluteal cleft and over the left great trochanter. On the sixteenth postoperative day fecal incontinence appeared, urinary retention persisted. In all other respects the picture of a severe transverse myelitis" continued unchanged. From now on the patient had a septic temperature, ranging from 99.8 in the morning to 104 F in the late afternoon. Occasionally, the rise in temperature was preceded by a severe chill. He now had a cystitis and pyelonephritis. The instillation of a permanent catheter and adequate drainage from the decubital sores did not influence the temperature curve. On two occasions blood culture revealed *Staphylococcus aureus* and *albus*. The patient lost ground rapidly and three months after the operation he died as a result of secondary sepsis.

At autopsy, gross examination of the bladder showed evidence of a marked cystitis, in addition, there were ureteritis, pyelitis and abscesses in both kidneys. The abdominal viscera were otherwise normal.

The spinal cord and roots were removed up to the third thoracic segment. The dura was intact. The pia-arachnoid was hyperemic, especially in the lumbar region. The cord was slightly hyperemic at the eighth thoracic segment and especially so at the tenth thoracic segment. The posterolateral columns at the eleventh segment were softened. At the twelfth thoracic and first lumbar segments the cord appeared softened except for a small part of the anterior columns.

In the myelin sheath preparations the cord between the ninth thoracic and sacral segments showed the following. At the ninth thoracic segment there was demyelination of most of the fiber tracts, this was most pronounced in the region of the lateral pyramidal spinothalamic rubrospinal and ventral spinocerebellar tracts (fig 1B). The demyelination was more marked at the periphery in the lateral pyramidal tracts it was of a patchy nature (fig 1B). The posterior columns at this level showed a slight ascending degeneration. At the twelfth thoracic segment the demyelination was more marked in the posterior columns, posterior horns anterior pyramidal and spinothalamic tracts (fig 1C). The entrance zones of the posterior roots showed more involvement at this level than in any other region (fig 1C). At the first lumbar segment the lesion was most marked in the anterior pyramidal tracts and posterior columns, the fasciculus gracilis being more involved than the fasciculus cuneatus (fig 1D). The other fiber tracts

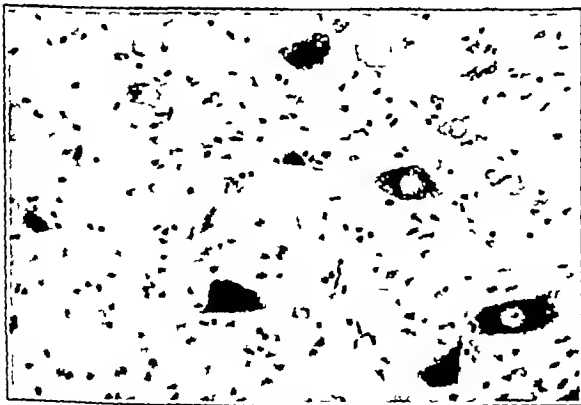


Fig 5—Chromatolysis and shadow cells of anterior horns, cresyl violet, slightly reduced from a photomicrograph with a magnification of 200 diameters.

at this level showed slight areas of demyelination. In the lumbar enlargement there was demyelination of the fasciculus gracilis and patchy areas of degeneration in the lateral pyramidal dorsal and ventral spinocerebellar tracts (fig 1E). In the sacral region the most marked destruction was noticed in the posterior columns, the pyramidal tract showed a slight ascending degeneration (fig 1F). The posterior roots were markedly demyelinated (fig 1F). The segments above the ninth thoracic region showed an ascending degeneration (fig 1G). Under higher magnification the area of demyelination

especially at the periphery, had a honeycombed appearance. The myelin sheaths showed complete disintegration, swelling or fragmentation (fig 2). In the fat preparations the entire cord between the ninth thoracic and the lower sacral segments was filled with fatty globules, which were most abundant at the periphery of the cord. The entrance zones of the posterior roots at the eleventh and twelfth thoracic and the first lumbar segments were completely filled with fat, fatty globules were also found in the perivascular spaces of

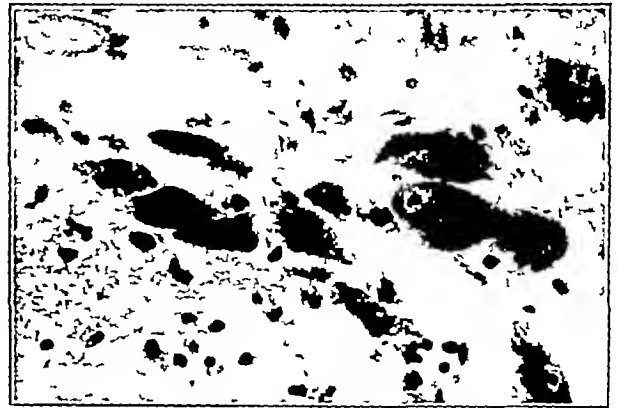


Fig 6—Ganglion cells from the lateral horns showing chromatolysis and peripherally displaced nuclei giving the cells a fish eye appearance, cresyl violet, slightly reduced from a photomicrograph with a magnification of 400 diameters.

the gray matter. In the Bielschowsky stained sections, the affected axis cylinders presented various pathologic changes such as complete breaking down swelling and corkscrew processes (fig 3). The areas of destruction in the Holzer preparations disclosed a poor glial response and a honeycombed appearance (fig 4). This glial response was similar to that seen in the cords of untreated cases of subacute combined degeneration (pernicious anemia). In the cresyl violet preparations some of the ganglion cells in the involved segments especially those in the ventrolateral group showed chromatolysis pigment atrophy and vacuolization (fig 5). The lateral horn cells showed chromatolysis with peripheral displacement of the nuclei, giving the cells a "fish eye" appearance (fig 6). In the sudan III preparations some of the ganglion cells contained fatty deposits.

In this patient a toxic myelopathy with the symptoms of spinal shock followed the use of a spinal anesthetic. The lesion was of unusual severity and resulted rapidly in a fatal issue. Neither operation nor autopsy threw any light on the nature of the post-traumatic abdominal condition that led to the exploratory laparotomy. The spinal anesthetic produced extensive destruction of the myelin sheath axis cylinders and glia mostly at the periphery of the cord and at the zones of entrance of the posterior roots (fig 1). The ganglion cells of the anterior and lateral horns were also slightly involved. Similar ganglion cell changes have been found in other cases of toxic and experimental myelopathy induced by various spinal anesthetics. In their study of toxic myelopathy Davison and Keschner<sup>16</sup> noted that the periphery of the cord was more involved than the central parts and that there was the same lack of glial response which is consistent with the short duration of the disease.

#### COMMENT

In all but one of the cases the cocaine derivative used was known, two received a preparation of procaine

<sup>16</sup> Davison, C. A., and Keschner, M. C.: Myelitis and Myelopathy. *Ann. N.Y. Acad. Sci.* 20:101 (1935).



with strychnine sulfate, three nupercaine and one procaine hydrochloride. The site of injection was the lumbar subarachnoid space between the second and third lumbar vertebrae or lower, except in one instance (case 5) in which the injection was made between the first and second lumbar vertebrae. This patient was subjected to two subarachnoid injections within thirty-eight days, patient 4 received two spinal anesthetics within twelve days. In both cases 4 and 5 the neurologic complications followed the second administration.

In this series there were two instances of aseptic meningitis, one of polioencephalitis, one of lumbar radiculitis, two of cauda equina neuritis and "myelitis," and one of transverse "myelitis." The time elapsing between the spinal anesthesia and the appearance of the neural complications varied. In the two cases of meningitis the onset was almost immediate, while at the other extreme is the case of lumbar radiculitis (case 4) with an interval of three weeks between the administration and the onset of the neural symptoms. In six of the seven cases the neurologic disturbances appeared within three days after the anesthesia.

Clinically, the two cases of aseptic meningitis ran a rapid and benign course ending in complete recovery. One instance of cauda equina neuritis and "myelitis" (case 6) and the other of transverse "myelitis" (case 7) ended fatally from complications directly attributable to the neural disease twenty-nine months and three months after the onset, respectively. Case 6 was particularly interesting in that the clinical course was characterized by long periods during which the condition was stationary, these periods were followed by spread of the process to higher levels of the cord. The most pain occurred in the patient with the lumbar radiculitis (patient 4). He still showed slight residual signs sixteen months after the onset. One of the patients with cauda equina neuritis and "myelitis" (patient 5) regained the ability to take a few steps five months after the onset, but the sphincters and sensory and reflex status remained unchanged. In the instance of polioencephalitis (case 3), life was despaired of early in the illness, yet the patient recovered but still had residual signs nineteen months after the onset.

The spinal fluid showed no characteristic picture. In case 1 there was an exudation of lymphocytes, while in case 2 there was a pleocytosis of polymorphonuclear cells with disappearance of sugar. With the recovery of these two patients the spinal fluids returned to normal.

The question of etiology in this series needs discussion. In all of the cases but one (case 4) the neural syndromes so speedily followed the administration of the spinal anesthesia as to suggest immediately a direct chemotoxic effect of the cocaine derivatives on the neuraxis. It must be emphasized, however, that the direct chemotoxic effect does not entirely explain the causation of the neural complications. There is the undeniable fact that the great majority of patients operated on under spinal anesthesia do not develop complications of the central nervous system. Furthermore, instances like case 4, in which the interval between the anesthesia and the onset of symptoms is relatively long, and like case 6 in which cauda equina neuritis and mild cord involvement continued over a period of months, terminating in a fatal transverse myelitis, suggest the possible intervention of other factors. What these may be is a matter of speculation at the present time. To account for the relative infrequency of neurologic complications following spinal

anesthesia, one has to assume the existence of tissue sensitivity to the cocaine derivatives. Instances like cases 4 and 5, in which two spinal anesthetics were administered, the first without ill effect, the second followed by neural disease, suggest that the first anesthesia had sensitized the nervous tissue. This assumption would not account for case 6, in which a process immediately followed a subarachnoid anesthesia and spread insidiously to higher parts of the cord over a period of twenty-nine months. Chemical agents usually have acute effects which spend themselves, the patient then suffers from the fixed after-effects of the poisoning. This was not so in case 6. Here one is led to assume that an original chemotoxic effect permitted other factors (virus?) to operate on a neural tissue devitalized by the anesthetic.

A consideration of the difference in the cellular reactions of the spinal fluid in the two instances of meningitis adds weight to the belief that other factors participate. In this connection the very close resemblance of the case of lymphocytic meningitis to the cases described by Abramson is of special interest, since his review of the evidence concerning the etiology is very much in favor of a virus.

The tissue changes in the spinal cord in case 7 are those of a toxic myelopathy exactly similar to the few cases already mentioned in the literature.

Spinal anesthesia has been successfully used in so many diverse conditions that the associated surgical diseases can have no causative relationship to the nervous complications.

It should be noted that allergic factors are not involved in these cases, since one is not dealing with protein sensitization. Unfortunately, at the present time there is no way of determining whether or not a patient's nervous tissues are oversensitive to the cocaine group of anesthetics. Nor is there anything but an unsatisfactory symptomatic therapy available, once nervous complications arise. For these reasons it is strongly urged that spinal anesthesia be restricted to a special group of individuals unable to withstand the risks of a general anesthetic.

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#### ABSTRACT OF DISCUSSION

DR. E. D. FRIEDMAN, New York. I have no desire to discredit spinal anesthesia but feel that attention should be directed to some unfortunate sequelae. Few reports on the subject of spinal anesthesia give observations on the neurologic status following the induction of anesthesia, the neurologic complications or the postmortem observations. Many surgeons prefer this method of anesthesia because it produces greater muscular relaxation and thus makes it possible for them to operate more rapidly. It also lessens the difficulty of replacing the intestine within the abdominal cavity at the end of the operation. The incidence of postoperative pneumonia is not lessened by this method of anesthesia and it therefore offers no diminution of risk as compared with ether anesthesia. The method must then be evaluated on the basis of the untoward complications. The most common symptom after the subsidence of the temporary anesthesia is pain in the extremities especially the lower limbs (probably due to radicular irritation). The fact that the posterior aspect and especially the periphery of the cord seem to be principally involved would indicate a direct toxic effect of either the drug itself or a split product. The hypothetical toxin that gives rise to posterolateral sclerosis seems to involve approximately the same portion of the cord, it is also a myelolytic agent. The fact too, that in six of the seven cases reported the neurologic sequelae appeared within three days after the induction of the anesthesia would also seem to incriminate the drug or a derivative of it. The fact that when the meninges

alone are involved the prognosis is good but that when the neural parenchyma is involved the prognosis is poor is corroboration of experiences in other forms of neural disease. The late development of symptoms in cases 4 and 6 is not an unusual phenomenon in neurology, although the exact mechanism is not altogether clear. Late sequelae have been described in cases of trauma to the spine in which the neural lesions come on long afterward, this may be the result of secondary vascular changes in the cord. I have encountered bilateral external rectus palsy and a number of cases of paralysis of visceral outflow with the development of adynamic ileus and retention of urine. Since the factor of constitution plays a role in all illness, one might presuppose that in certain individuals constitutional predisposition or vulnerability to chemotoxic agents may play a role. This whole subject should be further investigated through the cooperation of surgeons and neurologists and the obtaining of accurate neurologic data in all cases in which this method of anesthesia has been employed.

DR. G. H. HAYLOP, New York. It is my impression that surgeons who frequently use spinal anesthesia have at last become aware of its risks and complications. While it is true that the case material presented by the authors justifies one in regarding spinal anesthesia with caution, there is no need for becoming an alarmist. The value of this contribution lies in the fact that the authors have carefully described a variety of sequelae that should be recognized. It would seem that such sequelae cannot be regarded as preventable. An accurate idea as to the frequency of the minor or major unavoidable sequelae of spinal anesthesia does not exist. From my own knowledge I am satisfied that some of the authors of statistical papers have been unaware of and therefore omitted reference to nervous system sequelae that have occurred. The etiology of these sequelae is not clear. The drugs used produce temporary changes in nerve tissue through some chemical affinity. The degree of such tissue reaction probably varies with the individual. It is academically possible that idiosyncrasy, when present, is solely responsible for some of the transient minor after-effects. Such cases as the one described by the authors, in which a progressive chronic disability occurs, must involve more than tissue idiosyncrasy to the drug used. It is not known whether a latent virus may become activated in such cases, but this possibility is worthy of consideration. I do not think that the nervous system complications are due to the introduction of a virus during the procedure. Other intraspinal procedures, including routine lumbar puncture, are not known to be followed by conditions that are really comparable with the nervous system sequelae of spinal anesthesia. Familiarity with the fact that sequelae may occur should not permit one to be careless and jump at the conclusion that in a given case the clinical picture can be accounted for only as a sequel to anesthesia. True virus infections produce similar clinical pictures and might occur in a given case purely by coincidence. The correlation between the type of sequelae and its incubation period may give information of value from the etiologic standpoint. Frequent examinations of the spinal fluid during the forty-eight hours after a spinal anesthesia including a complete analysis of all the chemical constituents may give important information. Routine analysis of the spinal fluid has not revealed anything unusual in a small number of cases.

DR. C. C. NASH, Dallas, Texas. What drug and what method of administration was used in the spinal anesthesia? I didn't understand whether the authors stated that the drug was mixed with spinal fluid or whether it was carried in a solution, as some proprietary preparations are.

DR. SAMUEL BROCK, New York. Before spinal anesthesia can be used as a routine procedure some method must be found to eliminate individuals whose nervous tissues are unduly sensitive. As Drs. Friedman and Haylop have mentioned the cause of slowly progressive lesions is not clear. Might I point out that certain diseases such as measles and vaccinia are occasionally complicated by nervous involvement similar to that which has been described. In such cases there is much in favor of the current view that a latent virus is activated by the primary disease. It is possible that toxic lesions in some instances of spinal anesthesia may likewise permit a dormant

virus to attack devitalized tissue. Concerning the type of drug used, may I say that these were standard preparations of nupercaine of a preparation of procaine with strychnine sulfate, and of Jones solution, the dosage in all being the usual one. The drug was injected slowly without admixture of spinal fluid. The same technic was used in hundreds of other cases in these hospitals without ill effect.

## THE GILL BONE BLOCK OPERATION FOR FOOT DROP

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AND

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Disabilities of the ankle joint incident to various types of paralyses are of such frequency as to be of real interest not only to the orthopedic surgeon but to the general practitioner as well. Paralyses associated with anterior poliomyelitis probably comprise the largest group, but foot drop is often associated with cerebral hemorrhage and traumatic injury of the common peroneal nerve and is found occasionally associated with fractures of the spine. The muscle imbalance and resulting incoordination, such as is found in congenital cerebral paralysis, is frequently responsible for functional foot drop. Paralysis of or comparative weakness



Fig. 1.—Model showing bone block in position beneath plate of bone and cartilage of the astragalus. Source of bone block in the os calcis is shown.

in the dorsal flexors of the foot allows the unbalanced plantar flexors with gravity, to draw the foot into a foot drop position.

A brief review of the ankle joint mechanics will assist in understanding the value of the operative procedure under consideration. The ankle joint is essentially a hinged joint made up of the concave lower end of the tibia, the convex upper surface of the astragalus or talus with the respective malleoli of the tibia and fibula which with the transverse ligaments form a mortise for the reception of the astragalus. Lateral motion is negligible. Very slight forward motion of

the tibia on the astragalus is possible. Dorsal flexion of the foot consists in the approximation of the dorsum of the foot to the front of the leg, a right angle position being used as a starting point. Motion normally exists in dorsal flexion to about 10 to 20 degrees beyond a right angle with the long axis of the leg, but this varies with the length and relaxation of the gastrocnemius and the position of the knee, that is, with the knee flexed the gastrocnemius is relaxed sufficiently to allow greater dorsal flexion than when the knee is extended. Plantar flexion generally exists to a degree that allows the foot to be moved to a point from 50 to 60 degrees beyond a right angle with the leg. According to Snow,<sup>1</sup>

The operative procedure that we have used is essentially that of Dr. Gill, with one or two minor modifications. The skin incision is usually made parallel to the achilles tendon at the medial side. The tendon is exposed and divided Z fashion. An incision is then made longitudinally through the underlying fat, which is then pushed to both sides, exposing the posterior aspect of the ankle joint and the superior surface of the os calcis. The ankle joint is opened. The foot is then dorsally flexed to the limit of motion. This brings the posterior portion of the articular surface of the astragalus into view in the wound. With a thin, broad osteotome, the articular surface with a thin portion of

### Summary of Cases

| Patient | Age | Years | Diagnosis and Previous Treatment   | Immobilized | Time Observed | Result  |
|---------|-----|-------|--|-------------|---------------|---|
| R L     | 13  |       | Anterior poliomyelitis foot drop and triple arthrodesis (left)   | 8 weeks     | 2 years       | Excellent block holds well foot stable no pain  |
| M P E   | 9   |       | Anterior poliomyelitis foot drop previous triple arthrodesis (left)  | 5 weeks     | 2 years       | Excellent block holds well no pain  |
| C D     | 10  |       | Anterior poliomyelitis foot drop previous Hoke arthrodesis (right)   | 3 weeks     | 26 months     | Partial failure about 15 degrees plantar flexion allowed reoperated first block too small |
| W W C   | 20  |       | Chronic osteomyelitis old compound fracture of shular head traumatic section of deep peroneal nerve foot drop (left)           | 7 weeks     | 28 months     | Excellent block holds well no pain  |
| M M F   | 8   |       | Anterior poliomyelitis foot drop (right)   | 5 weeks     | 26 months     | Excellent block holds well no pain  |
| G S     | 13  |       | Anterior poliomyelitis foot drop (left)  | 7 weeks     | 12 months     | Excellent block holds well no pain  |
| H A A   |     |       | Anterior poliomyelitis foot drop (left)  | 7 weeks     | 15 months     | Excellent block holds well no pain  |
| M M L.  | 23  |       | Congenital dislocation of hips foot drop after old manipulation of hips operation combined with left subastragalar arthrodesis | 7 weeks     | 18 months     | Excellent block holds well no pain  |
| T R B   | 6   |       | Anterior poliomyelitis foot drop previous Hoke operation combined with extensor proprius hallucis to first metatarsal          | 8 weeks     | 15 months     | Excellent block holds well no pain  |
| D B     | 16  |       | Anterior poliomyelitis foot drop previous Hoke block combined with right calcaneocuboid arthrodesis                            | 8 weeks     | 15 months     | Excellent block holds well no pain  |
| D M     | 14  |       | Anterior poliomyelitis foot drop previous Hoke operation (right)   | 8 weeks     | 12 months     | Excellent block holds well no pain  |
| G B     | 21  |       | Anterior poliomyelitis foot drop (left)  | 7 weeks     | 12 months     | Excellent block holds well no pain  |
| F J     | 13  |       | Anterior poliomyelitis foot drop previous Hoke operation (right)   | 4 weeks     | 36 months     | Excellent block holds well no pain  |
| D L J   | 14  |       | Anterior poliomyelitis flail foot and foot drop operation combined with triple arthrodesis                                     | 6 weeks     | 34 months     | Excellent block holds well foot stable no pain  |
| F J     | 15  |       | Anterior poliomyelitis foot drop previous Hoke operation (left)  | 6 weeks     | 29 months     | Excellent block holds well foot stable no pain  |
| O F     | 15  |       | Anterior poliomyelitis foot drop (right)   | 4 weeks     | 23 months     | Excellent block holds well no pain  |
| O F     | 15  |       | Anterior poliomyelitis foot drop (left)  | 4 weeks     | 23 months     | Excellent block holds well no pain  |
| M G     | 13  |       | Anterior poliomyelitis foot drop flail leg (left knee arthrodesed)   | 6 weeks     | 23 months     | Excellent block holds well no pain  |
| M P     | 8   |       | Anterior poliomyelitis foot drop (left) previous arthrodesis knee (left)   | 6 weeks     | 22 months     | Excellent block holds well no pain  |
| N P S   | 16  |       | Anterior poliomyelitis foot drop (left) previous Hoke operation  | 4 weeks     | 38 months     | Excellent block holds well no pain  |
| V A R   | 9   |       | Anterior poliomyelitis foot drop (left) previous Campbell block (18 months before fracture of graft)                           | 6 weeks     | 23 months     | Excellent block holds well no pain  |
| W L     | 6   |       | Anterior poliomyelitis foot drop block combined with subastragalar arthrodesis   | 7 weeks     | 23 months     | Excellent block holds well no pain  |
| L M G   | 11  |       | Anterior poliomyelitis foot drop (right)   | 6 weeks     | 24 months     | Excellent block holds well no pain  |
| G S     | 12  |       | Anterior poliomyelitis foot drop (right)   | 4 weeks     | 12 months     | Partial failure 15 degrees plantar flexion allowed reoperated successfully                |
| M F B   | 13  |       | Anterior poliomyelitis foot drop previous Hoke operation (left)  | 6 weeks     | 26 months     | Excellent block holds well no pain  |

the extreme limit of plantar flexion is reached when impingement occurs between the posterior groove of the astragalus and the margin of the tibia. The Gill bone block operation<sup>2</sup> to limit foot drop utilizes this mechanical fact. We have employed the operation, as first described by Dr. A. Bruce Gill, for the past three years with increasing satisfaction.

The indications for the operative procedure that we have demanded are essentially those as described by Dr. Gill in two types of cases: first, in the type of flail or dangle foot, and second, in the type of case in which a strong achilles tendon is not balanced by anterior muscles.

The bone of the astragalus is lifted upward from behind until it comes in contact with the posterior lip of the tibia. The angle of the wedge-like space thus formed lies well forward beneath the cartilage and in front of the posterior lip of the tibia. This procedure must be carefully done to avoid breaking the anterior aspect of the plate of cartilage and bone. A wedge-shaped piece of bone (fig. 1) is then removed from the upper aspect of the os calcis, having plane surfaces to correspond to the surfaces of the space formed in the astragalus, and is driven firmly into the space beneath the superior portion of the astragalus. The achilles tendon is sutured with the necessary amount of lengthening. We have preferred closing the wound with plain No. 1 catgut, with either plain 00 catgut or black silk sutures for the skin. The operation has always been performed with the aid of a tourniquet. The foot is immobilized in

<sup>1</sup> Snow, L. C. Mechanical and Anatomical Principles of Operation for Drop Foot. Suggested New Operations. Surg. Gynec. & Obst. 51: 252 (Aug.) 1930.

<sup>2</sup> Gill, A. B. Operation to Make Posterior Bone Block at Ankle to Limit Foot Drop. J. Bone & Joint Surg. 15: 166 (Jan.) 1933.

plaster extending from the toes to the knee, with the foot in slight dorsal flexion, for approximately six weeks. Many of the patients have been bearing weight on their plaster casts at the end of six weeks and were free of plaster at the end of eight weeks. Other types of operative procedures<sup>3</sup> have been advocated and used to correct foot drop with varying degrees of success. Some of the operations have involved the use of a bone graft on the superior surface of the os calcis, which impinges with the posterior inferior surface of the tibia. These operations are popular and are apparently successful. However, several fractures of the new bone pillars have been reported and there is a very definite possibility of some pressure atrophy on the bone graft. In our hands, the Gill bone block has been more uniformly satisfactory.

In the past three years we have performed twenty-five operations of the Gill bone block in twenty-three

different patients with excellent results in twenty-three of the operations, two patients having been operated on twice. In these twenty-three excellent results, the block has been uniformly effective, there has been freedom from pain and in some cases the patient has noted a return of power to a greater or less degree of the previously overstretched dorsal flexors. In two of the earlier cases in this series the block obtained was not completely effective about 15 degrees of plantar flexion being allowed. These partial failures we feel have been due entirely to the fact that an insufficient width of bony block was used at the time of the operation and



Fig. 2—Roentgen appearance of foot in typical drop position. Same case as in figure 3.

can in no wise be interpreted as a fault in the operative procedure as outlined by Dr. Gill. We feel that this method offers certain very definite advantages over other procedures, namely its simplicity, the ease and speed with which it can be done, the shortness of time necessary to immobilize the foot, and in addition the removal of any danger of possible fracture of a bone graft such as is obtained by some of the operative methods.

Of the twenty-three excellent results, eight cases have been observed over a period of from one to one and a half years, fourteen from two to two and a half years, and three for more than three years. The two partial failures demonstrated a partial ineffectual block

about three months after operation. In none of the cases has there been any tendency to the development of a calcaneus deformity.

#### SUMMARY AND CONCLUSIONS

With the operation as described by Dr. A. Bruce Gill to make a posterior bone block at the ankle to limit



Fig. 3—Typical postoperative appearance of foot.

foot drop, twenty-three excellent results in twenty-five operative cases have been obtained, with effective bone blocks and freedom from pain. Two partial failures have been due to errors in technique and not to the opera-



Fig. 4—Typical postoperative roentgen appearance of foot. A and B correspond to A and B in figure 1.

tive procedure itself. In none of the cases has there been any tendency to the development of calcaneus deformity. The operative procedure can be done rapidly and easily, and it is seldom necessary to immobilize the foot longer than eight weeks.

318 West Franklin Street

3. Campbell, W. C. Operation for the Correction of Drop-Foot. *J. Bone & Joint Surg.* 5: 813 (Oct.) 1923. End Results of Operation for Correction of Drop-Foot. *J. A. M. A.* 85: 191 (Dec. 19) 1925. November 1926. Arthrodesis of the Foot. *J. Bone & Joint Surg.* 10: 61 (April) 1928. Mayer, L. Operative Treatment of Paralytic Deformities of Foot. *Am. J. Surg.* 7: 80 (July) 1929. Wagner, L. C. Modified Bone Block (Campbell) of Ankle from Paralytic Drop Foot with Report of Twenty Seven Cases. *J. Bone & Joint Surg.* 13: 142 (Jan.) 1931. Campbell, A. Correction of Drop Foot by Posterior Arthrodesis. *ibid.* 13: 64 (Jan.) 1931.

## TORULOSIS

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Stoddard and Cutler<sup>1</sup> in 1916 were the first to describe accurately the clinical and pathologic characteristics of torula infection in man. It is probable that cases of torulosis had been observed previous to that time, but the distinction between this infection and systemic blastomycosis, as well as coccidioidal granulomas, had not been clearly defined. Following the work of these observers the disease received more general recognition and cases were reported from practically all parts of the world. In 1931 Freeman<sup>2</sup> published a comprehensive monograph on the subject and at that time was able to collect forty-three cases of torula infection from the literature. At present it is impossible to make a correct estimate of its incidence, because of the frequency with which unreported cases are encountered. However, the medical profession generally is not familiar with the characteristics of this infection and the appearance of a case is of sufficient interest to deserve mention.

## REPORT OF CASE

*History*—C. W., a man, aged 53, Chinese, was studied in association with Dr. J. R. McClure in the medical service of the Newark City Hospital in March 1935. He was born in San Francisco and had made two trips to the Orient. He contracted no acute illnesses during these trips and they had no apparent effect on his general health. For the past eighteen years the general state of the patient's health had not been good, but he had been able to follow his occupation as a laundryman with but few interruptions. During this period he suffered from a kidney disorder, which was characterized by transient attacks of chyluria and hematuria. On several occasions a filaria organism was found to account for the etiology of this condition and the attacks cleared up promptly under arspenamine treatment. He was frequently admitted to hospitals where he underwent thorough diagnostic study. He was discharged from such an institution one month before the onset of the present illness, and up to this time nothing suggestive of torulosis had been discovered.

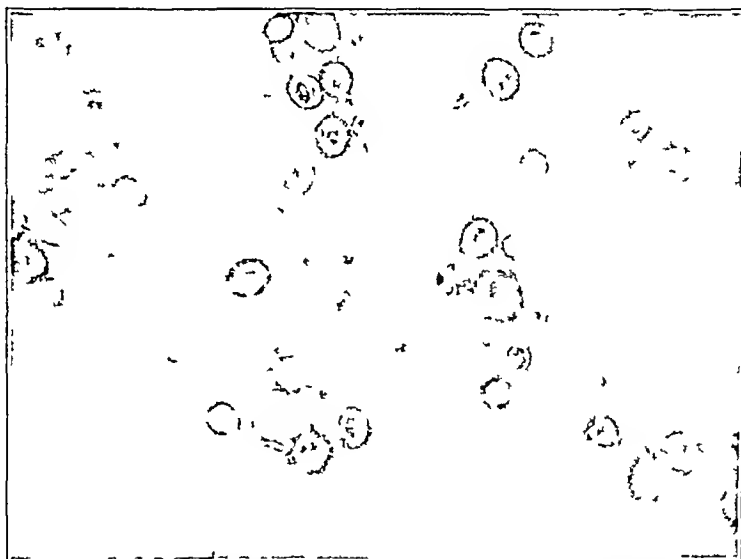
The present illness began about two weeks before admission with a severe frontal headache accompanied by weakness and dizziness. These symptoms developed rapidly. He was so unsteady on his feet that he could not walk or even stand without support. The headache remained localized in the frontal region but became so severe as to be almost intolerable. During the past few days he had been nauseated and vomited frequently, the vomiting being quite forceful.

*Physical Examination*—The patient was of small stature and of delicate skeletal structure. He was normally developed but

poorly nourished. The skin was dry and wrinkled and the subcutaneous tissues were wasted, showing evidence of marked recent loss of weight. There was a fairly abundant thatch of coarse black hair on the head. The body hair was normal in amount and distribution. The mental state was stuporous and the patient was restless and moaned frequently. He could be aroused and responded intelligently to simple questions. At times he seemed excitable and apprehensive and mumbled in his native tongue. Even in moderate light there was marked photophobia. The neck muscles were spastic and the neck could not be flexed beyond a 180 degree angle with the trunk. Kernig's sign was questionably positive. The patellar reflexes were absent. Babinski's sign was negative. The strength of the muscles of the trunk and extremities was greatly reduced but bilaterally equal. The sense of pain was apparently normal and there was no evidence of abnormality of the sensorium, although a detailed examination was impossible, owing to the cloudy mental state of the patient.

The eyeballs were normally and equally prominent. There was marked nystagmus when the eyes were turned in either lateral position. The sclerae were clear and the conjunctivae were pale. The pupils were small, round and equal and reacted only slightly to light. There was no evident impairment of sight. The nostrils were free from obstruction and discharge. The patient responded only to a loud voice, but the lack of response was apparently due to stupor. The ear canals were free from discharge and the tympanic membranes were retracted and of a dull gray. There was the scar of a healed perforation in the right ear. The mastoid regions were free from swelling or unusual tenderness. There was a good complement of teeth, in fairly good repair. The tongue protruded in the midline and its surface was covered by a thin white coat.

The lymph nodes showed no unusual adenopathy. The thyroid gland was small and of uniform, fibrous consistency. The radial brach



Appearance under high power of torula cells recovered directly from spinal fluid. Note the absence of leukocytes. The diagnosis of torulosis depends on the demonstration of these organisms. The organisms have the same appearance after prolonged cultivation on culture mediums; no endospores or mycelia are formed.

ial and temporal arteries were smooth, straight and compressible. The heart rate was 68 per minute and regular. There was no enlargement of the precordial area of dullness. The sounds were of good quality and normally accentuated. The first sound at the apex was accompanied by a soft systolic murmur not transmitted. The anterior abdominal wall was retracted. The liver and spleen were not enlarged to palpation or percussion. There was no unusual tenderness. There was no deformity or limitation of motion of any of the joints of the extremities.

*Laboratory Examinations*—Except for a trace of albumin and an occasional hyaline and granular cast examination of the urine gave essentially negative results.

Blood count showed a marked degree of secondary anemia and a definite disturbance of the differential leukocyte count. Hemoglobin was 50 per cent, the red cell count 4,300,000, and total leukocytes numbered 7,000. Differential polymorphonuclears 95 per cent, lymphocytes 3 per cent, large mononuclears, 2 per cent. The red blood cells stained poorly and with pale centers. There was definite anisocytosis and poikilocytosis.

A cloudy spinal fluid was under such high tension that it escaped from the needle in a continuous stream. After 30 cc. of fluid had been removed the pressure was reduced to normal and the patient was more quiet and apparently more comfortable. The analysis of the fluid was as follows: sugar

<sup>1</sup> Stoddard, J. L. and Cutler, E. C. *Torula Infection in Man* monograph 6, Rockefeller Institute of Medical Research, Jan. 13, 1916.  
<sup>2</sup> Freeman, Walter. *Torula Infection of the Central Nervous System* *J. of Psychol. & Neurol.* 43: 304 (Nov.) 1931.



absent, globulin very faint trace, cell count negative. Microscopic examination with a wet preparation showed heavy walled round bodies with buds. Gram stain showed gram-positive budding yeastlike bodies, and no cells. An india ink preparation showed the majority of the organism to be surrounded by a wide capsule, the width of the capsule being equal to or exceeding the diameter of the cell proper. The average diameter, including the capsule, was approximately 21 microns.

The centrifugated spinal fluid was inoculated on the following mediums: plain agar, 1 per cent dextrose agar, blood agar and Sabouraud's agar. The plates showed no growth after twenty-four hours. Good growth appeared on all plates in forty-eight hours. Sabouraud's mediums incubated at room temperature showed somewhat better growth than did any of the others. Cultures incubated under partial anaerobic conditions for ten days showed no mycelia or endospores.

Dextrose, lactose, maltose, saccharose and xylose were inoculated. None of these showed fermentation at the end of ten days.

*Progress of Disease While Under Observation*—A transfusion of 500 cc of citrated blood was given. This produced only slight elevation of hemoglobin percentage and red blood cell count and resulted in no improvement in the general condition of the patient. From the time of admission until the patient died five days later the mental state was one of gradually increasing coma with active delirium. He was inclined to be excitable and talked in his native tongue apparently in a rambling fashion. On the several occasions when he got out of bed he exhibited a marked incoordination of all bodily movements, so that he could not stand or even sit up without firm support. The physical and neurologic examinations showed no essential change from the condition described on admission. The temperature followed a low febrile course and did not exceed 100 F until a brief terminal rise occurred. The pulse rate varied between 60 and 90. Attacks of forceful vomiting were frequent. The immediate cause of death appeared to be the toxemia incident to the infection of the central nervous system. Postmortem examination was refused.

#### BIOLOGIC AND CULTURAL CHARACTERISTICS OF TORULA

Torulae are distinguished from the higher yeasts in that they form neither endospores nor mycelia and from the saccharomycetes by their pathogenicity and by the fact that they do not characteristically ferment sugars.

Torula grows readily on all laboratory mediums but the maximum is obtained on Sabouraud's medium. It grows best at room temperature, although a good growth occurs also at 37 C. In forty-eight hours a soft mucilaginous growth is formed on solid mediums, which as it piles up, has a tendency to flow toward the dependent portion of the tube. The cultures are resistant so that the organisms can be recultivated from cultures that have apparently been completely dried up for several months.

Torula cells are gram positive. The cells have a more or less definite nucleus and there is a fine reticular structure of the cytoplasm. In india ink preparations a capsule may be demonstrated as a clear broad luminous area surrounding the cells.

There is a wide variation in the pathogenicity of Torula to experimentally inoculated laboratory animals. The rabbit is practically immune while rats and mice are probably the most susceptible animals. Guinea-pigs also are easily infected and the organism readily invades their central nervous system. Torula may produce disease spontaneously in the lower animals. Infection of the horse was first described by Frothingham.<sup>3</sup> Weidman and Rutcliffe<sup>4</sup> observed the disease in the horse as well as in the captive cheetah (hunting leopard).

#### CLINICAL MANIFESTATIONS OF TORULA

The portal of entry to the body is probably the respiratory tract, but the evidence at hand is not conclusive. The open pharynx has been most often suspected, and the possibility of the organism entering the body through the tonsils, the accessory nasal sinuses and the middle ear has been mentioned. The central nervous system may be invaded without evidence of infection elsewhere in the body. The organism has been thought by some observers to invade the body by way of the gastro-intestinal tract. Large lymphatic tumors are often produced by invasion of the lymph nodes, and it is probable that the lymphatic system offers the most active defense against a generalized spread of the infection.

The onset of the disease may be insidious, with a marked delay in the appearance of symptoms. A generalized visceral involvement is relatively rare and was observed only three times in Freeman's<sup>2</sup> series of forty-three cases. When it does occur the clinical symptoms change with the variation in location and extent of the lesions, which may involve the liver, spleen, bone marrow, lymph nodes, kidneys, lungs, skin, suprarenal capsule and thyroid gland. Torula rarely produces superficial lesions and does not characteristically invade the skin. Many cases of Torula have exhibited the clinical symptoms of Hodgkin's disease. Mallory<sup>5</sup> has observed five such cases. A clear conception of the etiologic relationship of these two rare diseases requires further clinical and experimental study.

Infection of the central nervous system is evidenced by headache, stiff neck, visual disturbances, vomiting, ataxia, paralysis, convulsions, loss of memory, and disturbances of sleep. These symptoms may occur in various combinations, and their clinical interpretation is sometimes confusing. Torulosis may be mistaken for other diseases of the central nervous system, notably tuberculous meningitis and brain tumor. However, the organisms are usually found in large numbers in the spinal fluid and this makes the diagnosis clear.

Marked emaciation usually accompanies the infection wherever it is located. Anemia occurs only in proportion to the malnutrition. There is usually some elevation of temperature. The leukocyte count varies from moderate leukopenia with a normal differential count to a marked elevation of the total leukocytes. The count may reach 30,000 per cubic millimeter with 90 per cent of the leukocytes polymorphonuclear cells. The organism has only rarely been found in the urine.

The disease may run its course in a few weeks or months or it may persist for years. One case is recorded in which the patient lived for eight years after the onset of the disease. The infection is of low pathogenicity until the central nervous system is invaded. Once this has occurred, the clinical course of the disease is steadily downward with the possibility of only incomplete and temporary remissions. No treatment so far reported has had any effect on the course of the disease.

#### PATHOLOGY OF TORULA

The pathology of Torula is distinctive. The most characteristic changes are encountered in the central nervous system. The spinal fluid is under increased pressure and contains many yeast cells but there is a

<sup>3</sup> Frothingham, Langdon. J. Exper. Med. 5: 31, 1902.  
<sup>4</sup> Weidman, F. D. and Rutcliffe, H. L. Extension Generalized Torulosis in a Cheetah or Hunting Leopard. Arch. Path. 18: 16, (Sept.) 1914.

<sup>5</sup> Mallory. Case Record of Massachusetts General Hospital, edited by Richard Cabot. M.D. Case 22241. New England J. Med. 210: 1291 (June 14) 1934.

striking absence of cellular reaction on the part of the host. The organisms as they occur in the spinal fluid have often been mistaken for red blood cells, and their appearance may deceive experienced observers unless the budding forms are encountered. The meninges show granulomatous changes with fibrous thickening, and their surface is covered by layers of yeast cells. The organisms invade the substance of the brain either by direct extension along the perivascular spaces or, as often happens in the basal ganglions, by embolism. The vessels of the cerebral cortex are surrounded by masses of the organisms, which dissolve out the surrounding gray matter and give rise to large cystlike cavities. It is this lytic action of the cells which gives rise to the name of *Torula histolytica*. There is little or no cellular reaction against the invasion of the organism and only occasionally a few large macrophages are found in the nervous tissue in the vicinity of the lesion. The cerebellar meninges may be involved but the substance of the cerebellum is rarely invaded. The lesions are seldom encountered in the white matter.

When there is generalized visceral involvement the response on the part of the body gives rise to granulomatous lesions. The granulomatous areas are formed by local hyperplasia of the tissue histiocytes and may or may not include giant cells. Fitchett and Weidman<sup>6</sup> in a recent paper have discussed the pathologic relationship of the lesions to Hodgkin's disease. These observers were able only once to produce lesions in which microscopic examination was suggestive of Hodgkin's disease in laboratory animals experimentally infected by *Torula*.

## SUMMARY

*Torula* infection in man is a rare disease, but the possibility of its occurrence should be kept in mind in the clinical differentiation of diseases of the central nervous system as well as in the pathologic interpretation of granulomatous lesions.

A generalized systemic torulosis is often accompanied by a microscopic picture that is characteristic of Hodgkin's disease. These two rare diseases appear together much more frequently than may be accounted for by the theory of probability. However, their pathologic relationship has so far not been satisfactorily explained.

28 East Locust Street

6 Fitchett M S and Weidman F D Generalized Torulosis Associated with Hodgkin's Disease Arch Path 18: 225-244 (Aug) 1934

**Bathing During Menstruation.**—Should bathing be omitted during menstruation? On this point there has been a considerable change of opinion and practice in recent years. Our grandmothers were certainly as a rule taught that the daily bath must be abjured during menstruation while now many 'modern' girls take a daily shower or perhaps go in swimming without regard to menstruation. It would be foolish to lay down hard and fast rules in this respect. It can be said however, that for the girl who has accustomed herself to a cold bath or a cold shower every morning no harmful effects are to be expected if the cold showers are kept up during menstruation. The tub bath would be objectionable for esthetic reasons. Most girls however are accustomed to warm baths and these can be kept up during menstruation. It is probable that the majority of women depend upon the sponge bath during the period, but if a shower is available, there would seem to be no reason why it should not be enjoyed.—Novak, Emil. *The Woman Asks the Doctor*. Baltimore, Williams and Wilkins Company. 1935.

## SELECTIVELY IRRADIATED ERGOSTEROL

## PRELIMINARY COMMUNICATION

T H RIDER, Ph.D.  
GEORGE SPERTI, D.Sc.  
G PARK GOODE  
AND  
H G CASSIDY, M.A.  
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Recent literature on vitamin D and ergosterol irradiation products has been voluminous and it is beyond the scope of the present paper to include more than a brief review of a part of this work. Those who have been interested are well acquainted with the history of the recognition of rickets as a deficiency disease, of the discovery that this disease may be cured or prevented by the administration of cod liver oil or by exposure to sunlight, and of the subsequent discovery that ultraviolet radiation is capable of conferring antirachitic potency on ergosterol or ergosterol-containing materials. It is primarily the irradiation of ergosterol with which we are concerned.

It has not been determined at this time who first irradiated inert materials with ultraviolet radiation to produce in them a substance of value in the treatment or prevention of rickets. There were apparently many contemporaneous workers in the field, among whom may be mentioned Alfred F Hess, Harry Steenbock, Harry Goldblatt and Katharine M Soames, Eleanor M Hume and Hannah H Smith. It is not our purpose in this paper to review these early developments. Suffice it to say that by the end of the year 1924 it was made quite certain that many initially inert materials could be rendered antirachitically active by ultraviolet irradiation.

Intensive work was carried out in a number of laboratories to discover the nature of the widely distributed substance (or substances) susceptible of being so activated. The search was narrowed down by excellent reasoning and admirable laboratory work until it became evident from chemical, spectrographic and biologic approaches that the provitamin, or at least the most important one, was ergosterol or an unsaturated sterol of very similar constitution.

The discovery of ergosterol as the provitamin by Rosenheim and Webster, Windaus and Hess, and others made commercially possible the production of antirachitic agents for the treatment of rickets. Antirachitic substances prepared by the direct irradiation of ergosterol solutions with ultraviolet rays have been marketed under the generic name viosterol, coined by the Council on Pharmacy and Chemistry of the American Medical Association. Since these products have been made by license under the Steenbock patent (U S 1,680,818) they have, apparently, been made by irradiation with "ultra-violet rays, such as are produced by a quartz mercury vapour lamp." The potency of viosterol is standardized by the rat assay, which has been developed to such a point that results are duplicable with relatively small error.

Other antirachitic vitamin preparations that have attracted medical interest have been various irradiated foods, irradiated milk, milk to which a vitamin D containing preparation has been added, and "yeast milk."

From the Research Laboratories the William S Merrell Company (T H Rider and H G Cassidy) and the Basic Science Research Laboratories University of Cincinnati (George Sperti and G Park Goode).

or "metabolized milk" from cows fed a supplement of irradiated yeast.<sup>1</sup>

When milk that had been irradiated by a carbon arc was compared with viosterol in oil in clinical tests, Hess and Lewis<sup>2</sup> reported that it was evident that the milk was the better vitamin source and belonged in the category of "yeast milk" and cod liver oil. On the basis of the number of rat units administered, all three of these products produced a more favorable response in children than did viosterol in oil. This work still needs further investigation.

Two years before this it had been shown that the potency of one antirachitic could not be expressed interchangeably in terms of another. Hess, Lewis and Rivkin<sup>3</sup> found that many more rat units of viosterol than of cod liver oil were necessary to protect or cure infants. In another paper Hess, Weinstock and Rivkin<sup>4</sup> stated that the actions of the two specific antirachitic agents viosterol in oil and cod liver oil were not identical in relation to infantile rickets.

Barnes, Brady and James,<sup>5</sup> in their study of more than 200 children, came to the conclusion that

It would seem that we are not justified in considering rat units of vitamin D in irradiated ergosterol as being equivalent to the same number of rat units of vitamin D in cod liver oil as a curative or prophylactic remedy for rickets.

In a later paper, Hess and Lewis<sup>2</sup> reemphasized their statement that they had found it necessary to give six times as much viosterol (in terms of rat units) as cod liver oil to protect against or cure infantile rickets.

#### I Schemes for irradiation of milk and its products

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Supplee G. C., Dorcas M. J. and Hess A. F. Irradiated Milk. The Energy Requirements for Antirachitic Activation. *J Biol Chem* 94 42-49 (Jan) 1932

More recent papers by Hess<sup>6</sup> and by Hess and Lewis<sup>7</sup> have advanced additional original data and have summed up some of these clinical results. These papers also give further bibliographic references.

It appears evident, then, that the rat unit is not wholly satisfactory as a basis of comparison of clinical expectancy from "yeast milk," viosterol and cod liver oil.<sup>8</sup>

This is understandable when one realizes that rickets in the rat is not wholly comparable to that in the human being. Hess, Lewis and Rivkin<sup>3</sup> reasoned that

When it is borne in mind that there is an essential difference in the pathogenesis of rickets in the rat and in infants, that the former is regularly brought about simply by a lack of phosphorus in the diet, whereas rickets never comes about in infants as the result of such a deficiency, it is not surprising that there should be a difference in their response to antirachitic agents. There has been a tendency to lose sight of the fact that rickets in the rat, although of great experimental value is not the exact counterpart of infantile rickets. A distinction in the reaction to viosterol and to cod liver oil between the infant and the rat was to be expected and it became inevitable when it developed that the former had specific phosphate raising properties not possessed by the latter.

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#### Clinical evidence of favorable results

Mitchell Eiman Whipple and Stokes

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Hess and Lewis<sup>2</sup>

Hess and Lewis<sup>1</sup>

2 Hess A. F. and Lewis T. M. Milk Irradiated by the Carbon Arc Lamp. A Clinical and Laboratory Study of Rickets. *J A M A* 90 647-653 (Aug 20) 1932

3 Hess A. F., Lewis T. M. and Rivkin Helen R. Newer Aspects of the Therapeutics of Viosterol (Irradiated Ergosterol). *J A M A* 91: 1885 1889 (June 14) 1930

4 Hess A. F., Weinstock Mildred and Rivkin Helen. Some Differences in Action Between Irradiated Ergosterol and Cod Liver Oil. *Proc Soc Exper Biol & Med* 27 665 666 (April) 1930

5 Barnes D. J., Braly M. J. and James F. M. The Comparative Value of Irradiated Ergosterol and Cod Liver Oil as a Prophylactic Antirachitic Agent when Given in Equivalent Dosage According to Rat Units of Vitamin D. *Am J Dis Child* 30 45 58 (Jan) 1930

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8 The adoption of the international unit both by the U. S. I. Interim Revision on Cod Liver Oil and by the Council on Pharmacy and Chemistry has done away with considerable confusion in the labeling of antirachitic agents with regard to potency. However, it is to be borne in mind that the international unit is also a rat unit. For this reason, even though two antirachitic agents are labeled with the same potency and in the same unitage, this cannot be considered a guaranty of clinical equivalence. In this connection one recalls the interesting statement of C. E. Ellis (*Physiology of the Steer*, including Vitamin D. *Physiol. Rev.* 15 1-9 (Jan) 1935) footnote on page 69) that there is no reason to consider even the internal makes of vitamin D identical.

The rather enormous variations in the number of rat units of various antirachitic agents required to produce equivalent clinical results has been recently reported by the late Dr Hess<sup>7</sup>

A partial explanation of the discrepancies between the potencies of these antirachitic agents may lie in the fact that the irradiation of ergosterol with ultraviolet rays as developed by the quartz mercury vapor lamp may produce a multiplicity of ergosterol conversion products. It is possible that one of these is the "phosphate raising" factor mentioned by Hess and his associates<sup>3</sup> which might have a favorable curative effect on rickets in rats but not in human beings. Experiments to elucidate this question are being planned. The fact that the ordinary irradiation of ergosterol leads to the formation of products that have definite physiologic behavior—which may be of a harmful nature—without an effect in calcifying the bones may be another factor which helps explain these discrepancies.<sup>9</sup>

Laquer and Linsert<sup>10</sup> have found that by the further irradiation of vitamin D, a product which they name toxisterol may be formed. They have reported that this substance is quite toxic but antirachitically almost inactive. Its maximum absorption occurs at 250 millimicrons, and, since ergosterol after having been irradiated with the full ultraviolet spectrum until no activity remains has a similar maximum absorption, it appears that toxisterol is probably present in any product irradiated in this way.<sup>11</sup>

Reerink and van Wijk<sup>12</sup> and others<sup>13</sup> have shown that more than one product may be obtained in the irradiation of ergosterol if careful differentiation is not made between the longer and the shorter ultraviolet radiations. The possibility that exposure to the full ultraviolet spectrum will destroy the antirachitic factor once formed is also recognized in the Steenbock patent (U S 1,680,818).

It is of interest that the discrepancies between the rat and the human activities of antirachitic agents are to some extent paralleled by similar discrepancies between their activities in rats and chickens. As in the case of the human being, the protection or cure of the chick requires more rat units of viosterol than of cod liver oil.<sup>14</sup> The obvious suggestion occurs that a chick assay would be of aid in standardizing antirachitic agents if and when such an assay could be so developed as to give reproducible results.

Numerous attempts have been made to develop a chick assay to replace the commonly used rat assay in

order more closely to predict human clinical expectancy. While these attempts, a portion of which have been carried out by us, are significant with respect to our subject, they will not be discussed in detail at this time since no entirely satisfactory routine test has as yet been developed. Since the cure of rickets in chicks is apparently not attended by the formation of a definite line demarcating new calcification, the test is less amenable to sensitive quantitative interpretation than the rat test and is not at present sufficiently accurate for the adjustment of the potency of commercial medicinal products. We feel, however, that it would serve as a splendid confirmatory test and that as it is developed it may aid in indicating more accurately the clinical results that are to be expected from the assayed products.

In considering the chicken as a possible supplementary test animal for medicinal antirachitics, one fact seems to be of considerable importance, that is, that in the absence of vitamin D the chicken develops rickets in spite of an optimal calcium-phosphorus ratio and content in the diet. In the rat the diet must be definitely unbalanced with respect to these two constituents. Crimm and his co-workers<sup>15</sup> have made the point that a true physiologic action of vitamin D can only be analyzed in the face of an optimal intake of calcium and phosphorus.

The chick test will have to be further developed and standardized before it can be hoped that significant and reproducible quantitative results can be obtained. We are undertaking a further study of this problem because of our belief that such an assay can be adapted to the estimation of clinical expectancy of antirachitic agents from different sources.

A realization that the ordinary form of irradiated ergosterol was less effective for human beings and for chickens than for rats, when compared on the basis of cod liver oil, has led to many investigations of the possible effect of vitamin A on the activity of vitamin D (found with A in cod liver oil). While there may be a definite interrelationship of the actions of these two vitamins, and while the past shortcomings of irradiated ergosterol have stimulated the use of cod liver oil concentrates, as far as we know it has not been demonstrated that the administration of more vitamin A than normally occurs in the diet has had a favorable

9 Windaus A. von Werder F. and Luttringhaus A. Ueber das Tachysterin. *Ann d chem* **400** 188 191 1932

10 Laquer F. and Linsert O. Die biologische Wirkung des Toxisterins. *Klin Wchnschr* **12**: 753 754 (May 13) 1933

11 Irradiated Ergosterol. Vitamin D and Toxisterol editorial J. A. M. A. **101** 1564 (Nov 11) 1933

12 Reerink, E. H. and van Wijk A. Vitamin D and Iso-Ergosterol. *Nature* **122** 648 1928. The Vitamin D Problem. I. The Photochemical Reactions of Ergosterol. *Biochem J* **23**: 1294 1302 1929. On the Photochemical Reactions of Ergosterol. *Konink. Akad. Wet.* Amsterdam **32**: 845-848 1929. De bereiding van vitamine-D met behulp van ultraviolet licht. *Nederl. maandschr. v. geneesk.* **17** 126 1930. The Vitamin D Problem. II. Optical Rotation of Vitamin D. *Biochem J* **23**: 1001 1010, 1931. Isolation of a Crystalline Antirachitic Reaction Product from Irradiated Ergosterol. *Chemistry at the Centenary (1931) Meeting of the British Association for the Advancement of Science* W. Heffer & Sons Ltd. Cambridge 1932 pp 156-158.

13 Everse J. W. R. and van Niekerk J. Het standaardiseeren van vitamine D praeparaten. *Nederl. tijdschr. v. geneesk.* **75** 1101 1107 (March 7) 1931. Callow R. K. Crystalline Preparations of Vitamin D Obtained by Distillation (Review of the Work of the Research Group at the National Institute for Medical Research). *Chemistry at the Centenary (1931) Meeting of the British Association for the Advancement of Science* W. Heffer & Sons Ltd. Cambridge 1932 pp 149 154. A. Kew F. A. Bourdillon R. B. Bruce H. M. Callow R. K. Philpot J. St. L. and Webster T. A. Crystalline Vitamin D. *Proc. Roy. Soc. London s. B* **100** 488 596 (Jan 2) 1932. Bowden F. P. and Snow C. P. Physicochemical Studies of Complex Organic Molecules. I. Monochromatic Irradiation. *ibid* **115** 261 273 1934.

14 These references include

Massengale O. N. and Nussmeier Mildred. The Action of Activated Ergosterol in the Chicken. II. The Prevention of Leg Weakness. *J Biol Chem* **57**: 423 426 (June) 1930

Hess A. F. and Supplee G. C. The Action of Irradiated Ergosterol on Rats and Chickens. *Proc. Soc. Exper. Biol. & Med* **27**: 609 610 (March) 1930

Musschl F. E. and Ackerson, C. W. Irradiated Ergosterol as an Antirachitic for Chicks. *Poultry Sc.* **9** 334-338 1930

Musschl F. E. Viosterol in Rickets. correspondence. *J. A. M. A.* **95** 1281 (Oct 25) 1930

Steenbock Harry. Kleitzi S. W. F. and Halpin J. G. The Reaction of the Chicken to Irradiated Ergosterol and Irradiated Yeast as Contrasted with the Natural Vitamin D of Fish Liver Oils. *J Biol Chem* **97**: 249 264 (July) 1932

McDonald F. G. and Massengale O. N. The Antirachitic Potency of Eggs from Hens Receiving Massive Doses of Activated Ergosterol. *J Biol Chem* **99** 79 83 (Dec.) 1932

King E. J. Hull H. and Hall G. E. Calcium Phosphorus Metabolism in the Chicken. IV. Ergosterol Requirements of Growing Chicks. *Poultry Sc.* **12** 129 132 1933

Bethke R. M. Record P. R. and Kennard D. C. The Comparative Antirachitic Efficiency of Irradiated Ergosterol, Irradiated Yeast and Cod Liver Oil for the Chicken. *J Nutrition* **9** 413-425 (Sept) 1933

Rusell W. C. Taylor M. W. and Wilcox D. E. The Fate of the Antirachitic Factor in the Chicken. III. The Effective Levels and the Distribution of the Factor from Cod Liver Oil and from Irradiated Ergosterol in Certain Tissues of the Chicken. *J Biol Chem* **107** 735 746 (Dec.) 1934

15 Crimm P. D. Strayer J. W. Watson H. L. and Heermann G. Vitamin Therapy in Pulmonary Tuberculosis. III. The Effect of Viosterol on the Absorption, Retention and Excretion of Calcium. *Am. Rev. Tuberc.* **28**: 202 216 (Aug) 1933

influence on the activity of irradiated ergosterol<sup>10</sup> In explanation of these discrepancies, Steenbock, Kletzien and Halpin<sup>14</sup> arrived at the following conclusion

The vitamin D produced by ordinary irradiation of ergosterol with a quartz mercury vapor lamp is a different substance from that found in cod liver oil This is concluded from the fact that irradiated ergosterol whether fed in corn oil or in cod liver oil solution shows the same degree of antirachitic efficiency and the same toxicity

A quotation from a paper by Hess, Lewis and Rivkin<sup>3</sup> is also of interest at this point

There is no doubt that viosterol, as now produced contains a number of substances and that the antirachitic factor constitutes only one of the elaborated products Although we are not yet in a position to determine the best technical procedure sufficient data are already at hand to render it advisable that, when the mercury vapor lamp is used, filtered rather than unfiltered rays should be employed

We believe that the work which we have quoted establishes the facts (1) that the ordinary irradiation of ergosterol yields a plurality of products and (2) that the rat assay of such a mixture of products fails correctly to establish their clinical potency

It is obvious that the use of a single irradiation product which carries antirachitic potency is preferable to the use of a mixture The isolation of a single active product may be accomplished by the chemical or physical fractionation of ordinary irradiated ergosterol, provided all inert or injurious products of irradiation can be removed in this way However, the difficulty of making quantitative chemical separations of sterols is great While it is possible to derive a crystalline product from the ordinary irradiation of ergosterol, it is still quite questionable whether a single chemical compound representing antirachitic potency can be feasibly and economically isolated from such a reaction mixture

The ultraviolet absorption curve of ergosterol shows a series of peaks These peaks indicate wavelengths at which radiations are markedly absorbed As some of these peaks undoubtedly represent the absorptions of different linkages in the ergosterol molecule, it seems probable that at least two types of reaction may occur when the ergosterol molecule is subjected to unselected irradiation

That change which confers antirachitic potency on the molecule may involve one or more points of structure, and the later destruction of antirachitic potency may involve a continued change of the same portions of the molecule

On the other hand (with unselected irradiation) the simultaneous absorption at distinctly different wavelengths may induce concomitant reactions in several more different parts of the molecule These changes may or may not be physiologically significant

In this connection the almost obvious suggestion occurs that, when compared on the basis of rat units with ordinary irradiated ergosterol the greater clinical efficiency of "yeast milk" and irradiated milk may well

be due in part to a natural filtering process taking place during the irradiation of the yeast and of the milk, respectively Other factors also are involved, but it is interesting to balance this suggestion against the known absorption of proteins and other substances present which show that the shorter wavelengths are absorbed by these nonsterol cell constituents In approximately the concentrations in which they occur in the cell, nuclear purines and pyrimidines act as efficient long-wave pass filters with a "cut-off" at about 2,900 angstrom units

In 1924 we<sup>17</sup> studied energy relationships of biologic reactions and worked toward mathematical expressions for such reactions We knew that various parts of the spectrum showed markedly different biologic effects Our point of view was expressed in part as follows

Experiments have been performed by others in which one part of the spectrum was shown to be much more active than another Again, experiments have been performed in which it has been shown that there are some biological forms which will be readily attacked by one region of the spectrum and not at all by another

No experimenters, it seems, have sought for discontinuities in curves in which biological effects have been plotted against wavelengths

The theory of quanta and the mathematical calculations included in this paper are applicable only if discontinuities occur in these curves It was in this point of discontinuity, with its possibilities in physical and mathematical applications, that this particular investigation had its inception

The results of the preliminary experiments reported indicated that the method of reasoning would yield valuable results if applied to the problem of the irradiation of ergosterol

The discovery that the irradiation of ergosterol with full ultraviolet radiation as produced by the quartz mercury vapor lamp gave a multiplicity of products supported this view, and we have believed that the presence of each of the individual conversion products in such a mixture might be primarily attributable to the effects of radiations of different wavelengths present in the total spectrum developed by the quartz mercury vapor lamp

The results of the experiments performed by Sperti and his associates indicated that the formation of products other than vitamin D might be prevented and ergosterol transformed into a vitamin D under conditions obviating concomitant destruction thereof by eliminating or filtering out those shorter wavelengths which produced not only the vitamin but also the undesired products

Further developments of this idea and a comparison with the recent work of Windaus, Reerink and van Wijk<sup>12</sup> and others<sup>13</sup> indicate that such is the case There are two avoidable types of reaction leading to such a multiplicity of products It is possible that certain wavelengths will convert ergosterol into an inactive product and it has been proved furthermore, that the conversion product which is antirachitically active is in turn further converted into other products without antirachitic value by radiations of wavelengths differing from that which produced the original activation

The work of Sperti and his associates led to the issuance of a patent U. S. 1,676,579, pertaining to selective irradiation It has been demonstrated that ergosterol when acted on by a portion of the ultraviolet spectrum of longer wavelength with the exclusion of shorter wavelengths which may form undesired prod-

16 Hess J H, Poncher H G, Dale M L and Klein R I. Viosterol (Irradiated Ergosterol). Prophylactic and Therapeutic Dosage. *J. Am. A. 95* 316-323 (Aug 2) 1930. Rohmer L and Dubot R. Influence de la "vitamine A" sur l'action de l'ergosterol irradié dans le rachitisme humain. *Rev. franç. de pédiat.* 6:604-608 1930. Russell W C and Klein D. The Vitamin A Content of a Ration and the Antirachitic Potency of Irradiated Ergosterol. *Loutray Sc.* 10:292-4 1931. (Lanzmann E. Karotin und Vitamin A. *Jahrb. f. Kinderh.* 133:1-9 1932 (Oct) 1931. Hunter J E. Dutcher R A and Kneidel H C. Does Vitamin A Possess Vitamin D Sparing Properties When Fed to Growing Chicks? *Poultry Sc.* 11:239-240 1932. Steenbock Kletzien and Halpin. Justiz H J. Experimental Study of the Synergism of Vitamins. *Ztschr. f. d. ges. exper. Med.* 87:49-54 1931. Vol. 1 p. 46

17 Schneider Herrman and Sperti G. The Quantum Theory in Photochemistry. In: *State of Industrial Research Series* 4. 35-41 University of Cincinnati April 2 1927



ucts is converted only into an isomeric product which has pronounced antirachitic potency

A product prepared by the use of ultraviolet radiations of properly selected wavelengths prepared by license under the Sperti patent is now available<sup>18</sup> It is a solution of the irradiation product in vegetable oil, the potency of which has been adjusted to 10,000 U S P X (Revised 1934) units per gram

We believe that with properly selected irradiation the isomeric product or products which result are comparatively free of decomposition products This belief is substantiated by the results of a study of the near infra-red absorption spectrums of ergosterol and irradiated ergosterol by Shelow<sup>19</sup> She irradiated ergosterol with unfiltered ultraviolet rays and with radiation previously filtered to remove wavelengths shorter than 2,960 angstrom units for various periods of time and compared the near infra-red absorption spectrums of the resulting products with those of ergosterol, an iso-ergosterol and ergostadienone Her observations were highly instructive

The infra-red absorption spectra of series of samples irradiated through the 2,960 angstrom filter for periods ranging from one to six hours, with 26 to 65 per cent of the ergosterol changed, gave no evidence of decrease in the absorption bands attributed to the alcohol group or of the development of bands associated with the ketone group

In the case of the ergosterol irradiated with unfiltered ultraviolet the absorption curves could not be reproduced and there was almost always evidence of production of a ketone Shelow concludes

This preliminary investigation indicates that the alcohol group persists in ergosterol irradiated with wavelengths longer than 2,960 angstroms, while bands usually associated with the ketone group do not appear The resemblance of the curve of long-wave irradiated ergosterol to that of pure ergosterol and of iso-ergosterol suggests that the product of irradiation is an alcohol isomeric with ergosterol

Further evidence that irradiation by the method outlined results in the conversion of ergosterol only into a fraction which is antirachitically active is offered by the determination of the potency of the resultant product The exact amount of ergosterol converted in a test run was determined by a digitonin precipitation of the unchanged material, and the biologic potency of the product was attributed to the converted fraction only It was found to be more than 40,000 international units per milligram, which approximates the potency of the most active fraction isolated by Windaus, and of Calciferol," a chemically fractionated irradiation product

There is as yet little published work on the clinical effects of selectively irradiated ergosterol Reerink and van Wijk<sup>20</sup> gave a preliminary announcement of the results obtained by Prof E Gorter and Dr J J Soer of the Children's Hospital of Leiden, who employed a preparation, prepared by Reerink and van Wijk of ergosterol exposed to long wave irradiation (wavelengths longer than 275 millimicrons) in the cure of rachitic children Apparently complete healing was attained in all cases within fourteen days with a remarkably small daily dose In a later paper by Driessen, Gorter Haverschmidt and Soer<sup>21</sup> eighteen cases are

reported, with many roentgenograms of the wrist and with blood calcium and phosphorus figures In these experiments a selectively irradiated ergosterol prepared by Reerink and van Wijk was used to treat rickets in children The results were favorable with very small doses The material used in these tests was similar to viosterol in oil-Sperti process in the method of irradiation

As we have pointed out earlier in the paper, the standardization of various antirachitic agents in terms of rat units, even though these rat units are the new international units, cannot give an accurate quantitative comparison of the clinical efficacy of the products in question Hess<sup>22</sup> found the optimum daily dose of cod liver oil to be approximately 540 international units per day and the approximate necessary daily dose of viosterol (prepared by ordinary irradiation) to be in the neighborhood of 2,240 international units per day These results appear to be in substantial agreement with those of other clinicians and with Hess's later statements<sup>7</sup> Possible differences in the clinical effectiveness of viosterol in oil-Sperti process and viosterol preparations prepared by ordinary irradiation can be established only by extensive clinical trial However, on the basis of the dosages stated, it is estimated that the daily prophylactic dose for infants of viosterol in oil-Sperti process (potency 10,000 U S P X [Revised 1934] units per gram) will fall within a range of from one to four minims per day This dose is subject to change by the physician (as are all dosages) at his discretion No direct claims for clinical differences between the two types of viosterol are as yet warranted Careful clinical studies may indicate such differences

#### SUMMARY

Material collected from the literature shows that the clinical potencies of irradiated ergosterols are not as great as would be expected from comparative rat assays of these products and of cod liver oil

It has been suggested that the discrepancies between the expected and the actual clinical potencies of irradiated ergosterols may have been accounted for in part by the now overwhelmingly evident fact that irradiation of ergosterol with the full ultraviolet of the quartz mercury arc produces a multiplicity of products Some of these products are known to be inactive physiologically and others to be toxic without appreciable antirachitic activity

It has been pointed out that irradiation with a properly selected range of wavelengths is capable of transforming ergosterol almost completely into a fraction which is antirachitically active in high degree and which is not contaminated with degradative decomposition products

A product of selective irradiation of ergosterol is now available It is a vegetable oil solution of the antirachitic factor, the potency of which has been adjusted to 10,000 U S P X (Revised 1934) units per gram

Consideration of the theoretical discussions and of the sparse European clinical studies of selectively irradiated ergosterol indicates that there will be a possible variation in optimum dosage between the two types of product Clinical studies are at present under way, and others are planned, to establish the optimum dosages of viosterol-in-oil—Sperti process Pending the results of such studies, it is recommended that N N R dosages be used

18 Merrell's Viosterol (Sperti Process) in Oil  
19 Shelow, Elizabeth The Near Infra Red Absorption Spectra of Ergosterol and Irradiated Ergosterol Bull Basic Sc. Research 3 175 200 (Aug.) 1931

20 Reerink, E. H. and van Wijk, A. The Vitamin D Problem I The Photochemical Reactions of Ergosterol Biochem J 23 1304 1929  
21 Driessen, O. A. Gorter, E. Haverschmidt, J. and Soer, J. J. Oorspronkelijke stukken Rachitisbehandeling met D-vitamine I Nederl tijdschr v geneesk. 74 4205-4218 (Aug 23) 1930

22 Hess, A. F. Lewis, J. M., MacLeod, F. L. and Thomas, B. H. Antirachitic Potency of the Milk of Cows Fed Irradiated Yeast or Ergosterol A Clinical Test J A M A 97: 370-375 (Aug 8) 1931

## CONGENITAL DEFECTS

INCIDENCE AMONG THE SIBLINGS OF THE FIRST  
CONGENITALLY MALFORMED CHILDREN  
IN 275 FAMILIESDOUGLAS P. MURPHY, MD  
PHILADELPHIA

Married couples who become the parents of a congenitally malformed child, and who contemplate having additional children, frequently inquire regarding the possibility that any subsequent offspring will also be defective. To throw light on this question a consecutive series of families, each having a defective child, was interviewed regarding the development of each sibling of its defective member. The resulting information forms the basis for the present report.

## MATERIALS AND METHODS

The death certificate of every individual who was stillborn or who died in the city of Philadelphia during the five year period between Jan 1, 1929, and Dec 31, 1933, was inspected. Those revealing the presence of any congenital defect were copied, as were the birth certificates of the same individuals.

The deceased was assumed to have possessed a defect (a) if the latter involved the surface of the body or, (b) if entirely internal, its presence had been disclosed by operation or necropsy. Certificates with diagnoses failing to conform to these requirements were omitted from further consideration. The data on the certificates were supplemented by (a) visits to the homes of the deceased, (b) inspection of the maternity hospital records of the mothers and the necropsy notes of the

families included in this report the information was secured from either the parents or the grandmother of the defective individual, in more than 90 per cent of cases the mother was informant.

## RESULTS

Among 130,132 certificates for stillbirths and deaths from all causes there were 1,476, or approximately 11.3 per thousand, which recorded the presence of a congenital malformation. This number included diagnoses given as contributory causes of death as well as those stated to have been the chief causes of death.

TABLE 2—Chief Diagnosis of Subsequent Malformed Child\*

| Malformation Diagnosis     | Number of Malformed Children |
|----------------------------|------------------------------|
| Hydrocephalus spina bifida | 19                           |
| Anencephalus               | 7                            |
| Craniorachischisis         | 2                            |
| Gastrochisis               | 2                            |
| Pyloric stenosis           | 2                            |
| Anal defects               | 2                            |
| Extremity defects          | 2                            |
| Others†                    | 0                            |
| Total                      | 43                           |

\* Showing the diagnosis of the chief congenital malformation possessed by younger brothers and sisters of malformed children described in table 1. Compare the frequency of the various defects in the two groups.

† One case each of pulmonary stenosis, multiple defect, hernia, harelip, intestinal obstruction and heart defect.

Among the 1,476 certificates there were 890 (60.0 per cent) with satisfactory diagnoses for individuals who died in 884 families. For each of six families a certificate was on file for a second defective child who had also died during the five year period covered by the survey.

The complete reproductive history of a consecutive series of 501 mothers was secured. Of this group 226 (45.1 per cent) experienced no conceptions following the birth of the congenitally malformed child, whereas 275 (54.9 per cent) each bore one or more subsequent offspring.

The chief diagnosis of the first defective child in each of the 275 families is recorded in table 1. Among the latter there were thirty-four families, or 12.4 per cent, that possessed at least one additional malformed child. Twenty-five of the thirty-four families had at least two offspring following the birth of the first defective infant, and nine of the twenty-five each had a total of three malformed children. The defects observed in all later children are listed in table 2.

The outcome of all the 431 conceptions experienced by the 275 mothers following the births of their first, congenitally malformed, offspring are shown in table 3. Of these subsequent conceptions 331, or 76.8 per cent ended in the birth of full term, normally developed children. The remaining 100 conceptions ended in (a) miscarriages or (b) the births of malformed, stillborn or premature infants. These unsuccessful pregnancies represented nearly one in four of all those which followed the birth of the first defective child. The forty-three malformed children accounted for approximately 10 per cent of the total subsequent offspring.

The ratio of the number of defective to normally developed children in each place-in-family following the birth of the first defective child, is expressed in decimal form in table 3 column 4. The subsequent defective children appeared with equal frequency in the first two birth positions immediately following that of the first defective child. Their frequency was decidedly

TABLE 1—Chief Diagnosis of First Malformed Child\*

| Malformation Diagnosis             | Number of Malformed Children |
|------------------------------------|------------------------------|
| Central nervous system             | 199                          |
| Hydrocephalus, spina bifida        | 131                          |
| Anencephalus                       | 43                           |
| Monsters not described             | 11                           |
| Craniorachischisis                 | 9                            |
| Mongolism, cretinism, microcephaly | 5                            |
| Gastrointestinal tract             | 35                           |
| Pyloric stenosis                   | 20                           |
| Intestinal defects                 | 7                            |
| Esophageal defects                 | 4                            |
| Anal defects                       | 4                            |
| Other systems                      | 41                           |
| Harelip, cleft palate              | 11                           |
| Extremity defects                  | 7                            |
| Gastrochisis                       | 7                            |
| Urinary defects                    | 5                            |
| Hernias                            | 4                            |
| Heart defect                       | 1                            |
| Miscellaneous                      | 6                            |
| Total                              | 275                          |

\* Showing the diagnosis of the chief congenital malformation possessed by the first defective child to be born to each of 275 families for which complete data were available regarding the development of all offspring. Note the large number of serious malformations of the central nervous system.

defective child, and (c) visits and correspondence with the physicians who signed the birth and death certificates.

The visiting of the homes was begun approximately six months after the death of the last defective individual in the series. This work was done by three fourth year medical students now Drs Dorothea Kilham, T. D. Cuttle and Milton Mizer. For all

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greater, however, in the third and even later ranks. Statistical treatment of these figures indicated that these differences were significant.

THE INCIDENCE OF CONGENITAL MALFORMATIONS IN THE GENERAL POPULATION

There were 166,451 live births recorded in the city of Philadelphia during the five year period between Jan 1, 1929, and Dec 31, 1933. During the same interval 739 of the live born children died, and on their

TABLE 3—Development of Offspring Born Subsequent to Birth of First Defective Child\*

| Order      | Subsequent Pregnancies      |        |           |                                       |              |                   |              |
|------------|-----------------------------|--------|-----------|---------------------------------------|--------------|-------------------|--------------|
|            | Full Term Child Development |        |           |                                       | Interrupted  |                   |              |
|            | Number                      | Normal | Defective | Column 3<br>Divided<br>by<br>Column 2 | Miscarriages | Pre-mature Births | Still Births |
|            |                             |        |           |                                       |              |                   |              |
| (1)        | (2)                         | (3)    | (4)       | (5)                                   | (6)          | (7)               |              |
| First      | 275                         | 221    | 18        | 8.1                                   | 27           | 5                 | 4            |
| Second     | 94                          | 74     | 0         | 8.1                                   | 10           | 2                 | 2            |
| Third      | 32                          | 19     | 9         | 47.3                                  | 3            | 1                 | 0            |
| Fourth     | 14                          | 0      | 4         | 44.4                                  | 1            | 0                 | 0            |
| Fifth      | 8                           | 4      | 3         | 75.0                                  | 1            | 0                 | 0            |
| Sixth      | 5                           | 3      | 2         | 66.0                                  | 0            | 0                 | 0            |
| Seventh    | 2                           | 0      | 1         |                                       | 0            | 1                 | 0            |
| Eighth     | 1                           | 1      | 0         |                                       | 0            | 0                 | 0            |
| Totals     | 431                         | 331    | 43        |                                       | 42           | 9                 | 6            |
| Percentage | 100.0                       | 76.8   | 10.0      |                                       |              |                   |              |

\* Showing outcome of all conceptions of 275 women following the birth of a congenitally malformed or defective child. Data arranged according to order of subsequent pregnancies. Column 4 denotes ratio of defective to normally developed offspring. Note in column 4 the large proportion of defective offspring in the later pregnancies. In column 5 the large number of miscarriages (including abortions).

death certificates were congenital defect diagnoses which were considered as having been verified. An additional forty-three individuals, who were born prior to Jan 1, 1929, died during the five year period in question. If this group is added to the 739 mentioned, it might counterbalance the group that was born in the last part of the period covered by the survey, who died following Dec 31, 1933, and who therefore were not included in the present figures. The combined figures (739 plus 43, or 782) give a defect rate of approximately 4.7 per thousand of all live births, or one in 213.

As shown in table 3, there were 331 full term, normally developed children, forty-three with defects and nine that were normally developed but premature, giving a total of 383 liveborn children. The forty-three defective offspring represented 11.2 per cent of the latter, a defect birth rate of 112 per thousand, or one defective child in each 8.9 births in these families. Since the defect rate in the general population was demonstrated to be 4.7 per thousand or one defective child in each 213 births, that in families already having one defective child was approximately twenty-four times the former.

COMMENT

The law does not require the registration of congenital defects on birth certificates and does so on death certificates only in case the defect played a role in bringing about the death. Consequently there is no recording of malformations on death certificates in cases in which the defect is not lethal in its effect. For this reason many malformations are not registered. The incompleteness of the figures dealing with the frequency of congenital malformations in the general population presented in this report therefore are fully realized but are nevertheless submitted, since they are believed to be the most satisfactory control figures that are available for the present study.

SUMMARY AND CONCLUSIONS

1 A consecutive series of 275 families each known to have possessed a congenitally malformed or defective child, and also one or more subsequent members, was interviewed with regard to the outcome of all conceptions of the mothers.

2 Thirty-four, or approximately 12.4 per cent, of the families gave rise to one or more additional congenitally malformed members.

3 Among 431 conceptions that followed the birth of a malformed child, 331, or 76.8 per cent, ended in the birth of full term, normally developed offspring. The remaining 100, or approximately one in four of the subsequent conceptions, ended in (a) forty-three (10 per cent) congenitally malformed children, (b) forty-two miscarriages (including abortions), (c) nine premature births and (d) six stillbirths.

4 In families having one congenitally malformed child, a second one was born once in every 8.9 births, whereas in the general population a congenitally malformed infant appeared only once in every 213 births.

5 From this study it is concluded that offspring presenting congenital malformations which are serious enough to warrant being recorded on death certificates are approximately twenty-four times as likely to occur in families possessing a congenitally malformed child as in the population at large.

PERCENTAGE OF WEIGHT LOSS

A BASIC INDICATOR OF SURGICAL RISK  
IN PATIENTS WITH CHRONIC  
PEPTIC ULCER

HIRAM O. STUDLEY, MD  
CLEVELAND

The general mortality rate among patients suffering from peptic ulcer has been materially reduced by surgical care. The reduction has been due chiefly to early operation in those having one type of ulcer lesion, that is, ruptured ulcer.<sup>1</sup> The rate following operations for chronic peptic ulcer, uncomplicated by rupture or gross hemorrhage, has always been much lower, but proportionate progress in reducing this figure further has not been made. This rate has remained for some time at a relatively stationary level of about 10 per cent,<sup>2</sup> except in selected series. To present further observations on the sequence of events leading to this sustained rate is my object in this communication.

The ordinary patient chronically ill with peptic ulcer is to be dealt with here. Those patients with ruptured peptic ulcer, with acute hemorrhage or with gastrojejunal ulcer are naturally not under consideration, since they all present preoperative and operative conditions which are in no wise comparable to those in patients with the usual chronic peptic ulcer. Those patients who had had previous operations for peptic ulcer, other than anastomotic procedures, however, are included, since these patients present problems of the same type found in many with chronic ulcer coming to their primary operation.

From the Department of Surgery of the University Hospitals and the Western Reserve University School of Medicine.  
These patients were studied in the Gastric Clinic of the Departments of Medicine and Surgery of the University Hospitals.  
Brit. M. J. 2: 169-173 (Aug. 2) 1930.  
2 Hartwell, J. A., and Feller, R. K. Peptic Ulcer. Surgical Aspects Including End Results. Ann. Surg. 92: 602-615 (Oct.) 1930. Gibbon, J. H. Immediate Mortality in Operations for Gastric and Duodenal Ulcer and Its Causes. Ibid. 92: 616-619 (Oct.) 1930. St. John, F. H. Follow Up Study of Results in Surgical Therapy for Gastric and Duodenal Ulcer. Ibid. 92: 597-601 (Oct.) 1930.

The cases of fifty consecutive public ward patients operated on at the Lakeside Hospital for chronic peptic ulcer of nonemergency type were reviewed in a search for a factor or factors contributing to postoperative mortality. Special attention was paid to the following possible factors, which are commonly considered to be of major importance in determining the immediate postoperative outcome: age of the patient, positive preoperative cardiorespiratory signs leading to postoperative pulmonary complications and death, a secondary operation in contrast to a first or primary operation for peptic ulcer, the presence of pyloric stenosis, the location of the ulcer, the type of operation, the duration of the operation, and the surgeon. Detailed study, the results of which are too extensive to be reported here, failed to demonstrate any of these possible factors as being of chief or consistent importance in determining the postoperative mortality rate. It was observed, however, that the patients who died after operation had quite regularly lost preoperatively a considerable proportion of their weight. The relationship between the preoperative loss of weight and the postoperative mortality was consequently chosen for further investigation.

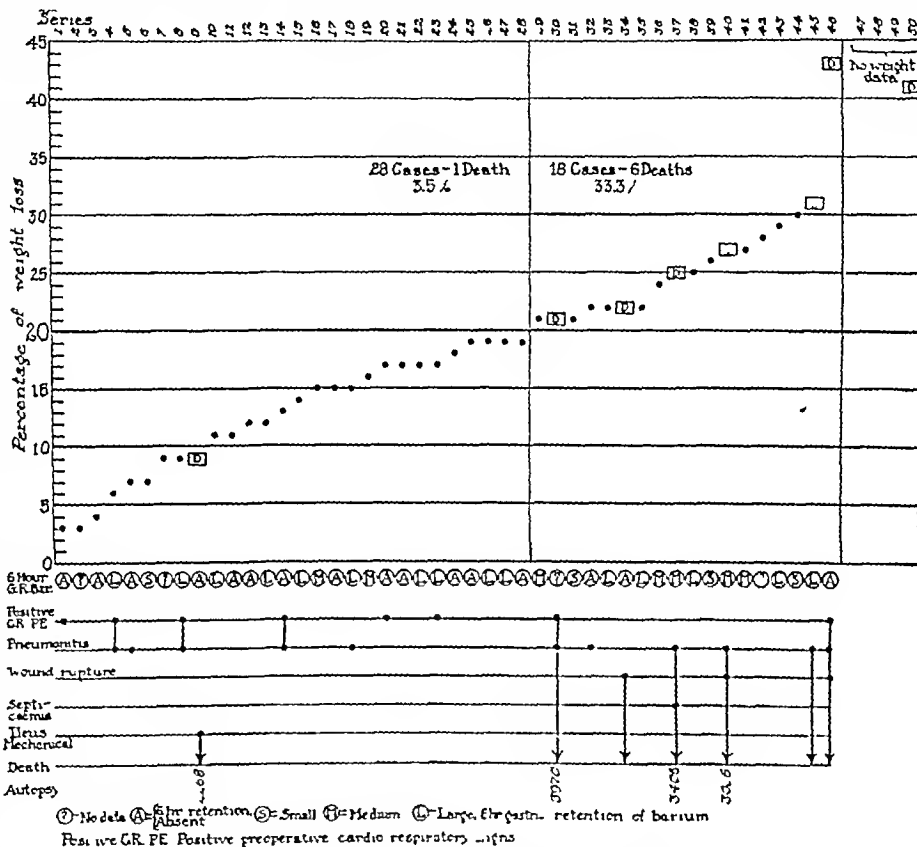
In order to do this, it was found practical to determine the percentage of preoperative weight loss as follows: First, the record of the highest level of weight in health for the patient was noted. This was commonly found under the heading of "best weight." Many of these patients were followed in the outpatient department for months or years before operation, and in some of these repeated weighings showed great variation, associated with remission or recurrence of symptoms. If the record in the outpatient department showed a weight approximately as high as that in the statement of the patient, it was used in preference. Second, the last preoperative weight commonly found recorded a few days before operation, was noted. This figure subtracted from the highest weight reading was accepted as the number of pounds of preoperative weight loss. This was expressed as a percentage of the highest weight level and was considered as representing the weight lost preoperatively.

Of the fifty cases forty-six were found to have the necessary data for the determination of the preoperative weight loss. In four of the fifty cases a statement of weight was not to be found. It was necessary in twenty-three cases exactly half of the forty-six to utilize the best weight figure as given in the patient's statement.

Among the forty-six cases there were seven postoperative deaths, or a mortality rate of 15 per cent. It

all patients who had had previous operations for peptic ulcer had been excluded (a usual custom in reports of this kind), the postoperative mortality rate would have been 12.5 per cent.

In the study of the relationship of loss of weight to the postoperative outcome, two preliminary points came up for consideration as possible modifying factors to any correlation. The question arises, would the loss of a certain percentage of weight in a heavy person be as important as the loss of the same percentage in an individual of light or medium weight? Secondly, would the rapidity with which the loss of weight occurred modify any correlation that might be found between the percentage loss of weight and the postoperative outcome? It was found that while each of these considerations might be of significance their importance



Preoperative weight loss. Major postoperative complications. (Preoperative gastric retention of barium sulfate considered in relation to preoperative weight loss and postoperative deaths. Preoperative cardiorespiratory signs considered in relation to postoperative pneumonitis and deaths.)

was relatively small and their modifying influence on the basic question was of no practical value. With these two preliminary considerations excluded as essentially modifying factors, the relationship between the percentage of preoperative weight loss and the postoperative mortality rate was brought out in a striking way by the following procedure.

The patients were arranged in sequence according to the individual percentage weight loss and the series was then arbitrarily divided into three approximately equal groups (table 1): group A, fifteen patients who lost 14 per cent body weight or less; group B, sixteen patients who lost from 16 to 21 per cent; group C, fifteen patients who lost from 22 to 43 per cent. The deaths in the series were found to be distributed as follows: one in group A, one in group B and five in group C.

In group B the single death occurred in a patient who had lost 21 per cent of his weight, in this group of sixteen patients there were only two others, or three in all, who had lost more than 20 per cent of weight. Adding these three to the fifteen patients of group C, each of whom lost a still greater percentage, it is seen that the mortality with one exception (one death in group A) is confined to those who had lost more than 20 per cent of weight prior to operation. The forty-six cases are thus placed in two groups, instead of three, in table 2.

The difference in the mortality percentage between the two groups A and B is more pronounced when it is considered that the one death among the twenty-eight who lost less than 20 per cent of body weight was found at autopsy to be associated with ileus that was of mechanical and not of infectious origin. This death was associated with a lesion that has no appreciable relationship to the subject being discussed here. Thus, with one exception, all the patients who lost less than 20 per cent of their preoperative weight lived to be discharged from the hospital, improved. Among the eighteen patients who lost more than 20 per cent weight, there were six postoperative deaths, or 33 1/3 per cent mortality, as shown in the accompanying chart.

#### COMMENT

The policy of delay in advising surgical treatment of patients with chronic peptic ulcer has long been urged and is now generally followed. Surgical treatment is usually sought only when unrelieved symptoms force the abandonment of other methods of therapy. During the period of delay while full trial is given to medical management the loss of weight is often considerable, particularly in those patients whose symptoms do not adequately respond and for whom operation is advised as a last resort. This phenomenon of a greater loss of weight was found in about 40 per cent of our patients coming for nonemergency surgical treat-

TABLE 1—Preoperative Percentage of Weight Loss and Postoperative Mortality in Three Groups

| Weight Loss Class | Number of Cases | Percentage of Preoperative Weight Loss | Mean Percentage Weight Loss | Deaths |
|-------------------|-----------------|--|-----------------------------|--------|
| A Smallest loss   | 15              | 14 or less                             | 8.7                         | 1*     |
| B Medium loss     | 16              | 16 to 21                               | 17.8                        | 1      |
| C Greatest loss   | 15              | 22 to 43                               | 26.8                        | 6      |

\* The patient with ileus of mechanical origin

ment of peptic ulcer, and it is likely to develop in any series of cases under good but prolonged medical management.

Since the foregoing evidence shows a high postoperative mortality rate to be closely associated with a large percentage of weight loss preoperatively, the presence of such weight loss in any single patient may function as a readily observable sign of special operative risk.<sup>3</sup> A specific method may be developed for over-

3 D. M. Berkman (Preoperative Management in Cases of Gastric Retention) *N. Clin. North America* 5:411 [Sept. 1921] has identified gastric retention as associated with special operative risk, whereas E. S. Emery, Jr. and R. T. Monroe (Peptic Ulcer Arch. Int. Med. 55:271, 292 [Feb. 1935]) have designated hypersecretion. J. F. Weir (Preoperative Treatment of Complications of Gastrointestinal Disease) *N. Clin. North America* 11:1407-1413 [May 1928] in addition to gastric retention has emphasized vomiting pain and fatigue. A. J. Walton (Prognosis in Surgical Treatment of Peptic Ulcers) *Lancet* 2:3739 [July 7, 1934] suggests concerning a group of patients with a higher postoperative mortality rate the severity of the illness as a general factor of note. The percentage of preoperative weight loss as noted above may measure the significance of these various manifestations in the estimation of the patient's ability to undergo operation safely.

coming preoperatively this extra hazard. Such an accomplishment may assist in reducing the postoperative mortality rate in this troublesome field of surgery from about 10 per cent to that level (about 3 per cent) usually associated with other serious major operations for nonlethal diseases.

#### SUMMARY

The factor of preoperative weight loss was found to be outstanding in a study designed to account for the mortality rate in a series of fifty consecutive patients from the public ward service of the Lakeside Hospital who were operated on for chronic peptic ulcer and who

TABLE 2—Preoperative Percentage of Weight Loss and Postoperative Mortality Cases Arranged in Two Groups

|  | Mean Percentage Weight Loss | Number of Patients | Deaths |
|--|-----------------------------|--------------------|--------|
| Group A Those losing less than 20 per cent | 12.6                        | 28                 | 1      |
| Group B Those losing more than 20 per cent | 26.1                        | 18                 | 6      |

\* The patient with ileus of mechanical origin

exhibited the usual clinical syndrome. On forty-six of these patients there were found comparable data on the preoperative weight loss, and among these there were seven deaths. On four patients, among whom there was one death, the weight data were not present. It was found that when the weight loss factor reached as high as approximately 20 per cent or above, it was associated with a postoperative mortality rate of 33 1/3 per cent in contrast to a rate of 3.5 per cent among those who had lost less weight, e. g., were in better preoperative condition according to this standard.

#### CONCLUSION

The physical state represented by a large loss of weight constitutes a major hazard faced by those suffering from chronic peptic ulcer. It must be included along with rupture of the ulcer and serious hemorrhage as a third possible major complication in the medical management of these patients, as some of them are of necessity transferred for surgical care in this state, which was found to exhibit a high operative risk. By the recognition of this phenomenon an additional basic guide in estimating surgical risk is obtained, and there is reason to believe that more patients will be saved, provided efforts are concentrated on the preoperative preparation of those who have lost a good deal of weight, regardless of other appearances in the individual.

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Sir Ronald Ross and Mosquito Day—On Aug. 20, 1897—afterward always called mosquito day—he found in the stomach of mosquito No. 37, which had been fed on the 16th 'a great white expanse of cells'. Ross continued to look and observed that each cell had a circular outline with pigment granules inside. Next day mosquito 39 was examined, a day further removed from the feeding there were the cells again, only much larger they had grown in twenty-four hours. Therefore, as they contained pigment exactly like that in the crescents they were almost certainly malarial parasites growing in the mosquito, and this was the stage of development after five days in the mosquito's stomach. These white cells, called "zygotes" were shown later to be the female. The night between examining No. 37 and No. 39 was spent in agony lest 39 should die it being then the sole survivor of the batch.

Manson arranged for the publication of Ross's discovery in the *British Medical Journal* Dec. 18, 1897—Hale-White, Sir William Great Doctors of the Nineteenth Century Baltimore William Wood & Co. 1935



## Clinical Notes, Suggestions and New Instruments

### HUMAN PARASITIZATION WITH GORDIUS ROBUSTUS

W Y SAYAD M D V M JOHNSON M D WEST PALM BEACH FLA.  
AND  
E C FAUST PH D NEW ORLEANS

Nearly all known animals, including man, are liable to be hosts, or dwelling places, for various kinds of parasites. Many of these parasites are commonly known to the medical world as well as to the public. The parasite that is to be described belongs to the gordiid worms of which two species are widely distributed in the United States. They are *Gordius robustus* and *Paragordius varius*, both of which were described by the physician-naturalist Joseph Leidy in 1851. The former species has a smooth cuticula, the latter, a rough cuticula provided with tuberculations and tufts of short hairs, or cilia, arising from the tips of some of the tubercles.

The literature records several cases of parasitism or pseudo-parasitism of man by gordiid worms from various localities including France, Italy, Bavaria, Dalmatia, East Africa, South-east Africa, West Africa, the Transvaal, Chile, the United States and Canada. The worms described from the five cases previously reported as occurring in the United States probably all belonged to the species *Paragordius varius* (Leidy) 1851, although only three were specifically diagnosed. In all the published reports of human infestation the worms were either vomited or passed by rectum and there was no definite proof that they were ever human tissue parasites.

The Gordiacea, or "horsehair worms," are familiar to naturalists who find them as light or dark brown wiry objects in quiet pools of fresh water, among grasses growing at the water's edge, or emerging from grasshoppers, crickets or beetles in contact with water. The adults may reach a meter or more in length by nearly a millimeter in greatest diameter but are usually somewhat smaller. The sexes are separate, the males being distinguished by their darker color and bifid posterior end. On insemination in water the female discharges long strands of snow-white eggs, which soon become brown. Development of the embryo within the egg shell requires about one month, whereupon the motile larva with a protrusible proboscis armed with three retractile stylets and three circlets of spines, emerges. These larvae first sink to the bottom of the water but later actively bore their way indiscriminately into living animal tissue in the immediate vicinity. In inappropriate hosts they are said to encyst and usually fail to develop further; however, in appropriate hosts including amphibious insects or those which accidentally fall in the water they metamorphose in the course of several months into juvenile threadlike worms in the body cavity of the host later emerge into the water rapidly mature and perform their sexual processes.

The case to be considered in this paper is worthy of report because we have been unable to find a similar case reported in the literature. Furthermore, its recording may serve as a stimulus for the pathologic investigation and study of similar tissue reaction encountered by others. The portal of entry may be of interest to the otolaryngologist and the final location to the ophthalmologist.

#### REPORT OF CASE

F S, a white man aged 37 residing in southern Florida telephoned the senior author from a neighboring town Nov. 27, 1934 past midnight that he had an abscess in the vicinity of his left eye and that it had caused his eye to be very red and painful. When he was seen an hour later the lower lid was considerably swollen red and tender. There was definite chemosis of the bulbar conjunctiva. At the lower margin of the orbit and about half way between the two canthi was a tumor like mass about the size of a small bean. The mass was hard, it was not easily movable, and it did not fluctuate. It was quite apparent that the condition was characteristic of a

tumor mass with secondary inflammation rather than an abscess formation. Further questioning revealed that he had first noticed the existence of the mass about two months previously and that it had continued to grow slowly until one week prior to his visit, when it began to swell rapidly and to become inflamed. There had been no itching sensation and very little pain but the swelling of the lower lid and the threatening involvement of the eyeball had caused him to seek medical advice.

The following day, under local anesthesia and through a linear skin incision, the mass was excised and the skin wound closed. An induration and redness persisted for several weeks, although the skin edges themselves closed rapidly. This perhaps may be attributed to the inflammatory condition of the skin and the surrounding tissues, caused by toxic excreta and the recent activity of the parasite. At the time of the operation, removal appeared complete and the tumor mass appeared completely encapsulated.

The specimen was sent to Dr. Johnson, pathologist at the Good Samaritan Hospital who found that grossly the specimen consisted of a pseudo-encapsulated mass of reddish, gray, roughly oval tissue. It measured 2.5 by 1 by 1 cm. On section it presented a pinkish gray fibrous wall, which surrounded a roughly oval cavity, containing a thin serous material, small suspended white flocculent particles and a small worm. The latter was of a waxy white color and, in part, semitransparent. It was irregularly coiled and measured approximately 4 cm in length. Only a portion was removed from the tissue, it being desired to section the remainder *in situ*.

Microscopic examination revealed the picture more or less typical of any host reaction to a foreign body. There was a well defined central zone occupied by a sectioned part of the worm, serum and polymorphonuclear cells. About this was an edematous pseudo-wall of fibroblasts and fibrin surrounded in turn by a dense inflammatory tissue rich in macrophages, lymphoid cells and eosinophilic cells. Scattered aggregates of giant cells of the foreign body type were noted. About the entire lesion were fibers of skeletal musculature leading one to believe that the lesion developed primarily within the muscular layer.

For further identification the specimen was sent to Dr. Faust, professor of parasitology in the department of tropical medicine at Tulane University School of Medicine. He observed that the worm was small, with an estimated measurement of not more than 50 mm and a greatest diameter of 0.38 mm (camera lucida tracing of section). When the specimen was received one part of the worm was in a block of tissue embedded in paraffin while the longer part was embedded separately. Serial sections of the first portion revealed evidence of a roundworm in a pocket of host tissue. The second portion was dissolved out of the paraffin and gradually transferred to pure glycerin in which medium it was carefully studied as a toto mount under the microscope.

The sections demonstrated that the worm possesses a cuticula, hypodermis and somatic musculature of a type peculiar to gordiid worms with a more or less thin homogeneous smooth outer cuticle next a thicker layer of crossing diagonal fibers, third a thin layer of nucleated glandular and nerve elements constituting the hypodermis and finally a very thick layer of muscle fibers. Internally a large cloaca and nearly a ventral nerve cord complex could be seen. Likewise there was a meshwork of mesenchymatous cells with a few large nuclei, which filled the body cavity. There was only a slight suggestion of developing mesenteries. This portion from which the sections had been cut was found later to constitute the subcaudal portion of the worm. The caudal extremity was apparently not in the material sent for identification.

The toto mount was about 40 mm long, creamy white and cylindric gradually narrowing toward the extremity which proved to be the anterior end. This end was truncated and possessed no pigmented annulus. It had a slight oral depression opening inward into the esophagus which in turn could be traced to the midintestine. The rectum and a pair of immature ovarian cords also were identified. No eyes were observed.

On the basis of these several differentiating structures in spite of the absence of the caudal extremity the evidence definitely limits the worm to a female gordiid and in view

of the smooth cuticula, to the genus *Gordius*. It is impossible to assign it to a species, although it is not unlikely that it is a specimen of the common American species, *Gordius robustus*. The specimen may therefore be referred to as an immature "white" *Gordius*. This is presumably the first record of this genus reported as a parasite of the human host in North America, and the first authentic record of its actual parasitism in human tissues.

It is a matter for conjecture as to how this worm became a human tissue parasite. The most plausible explanation seems to be that the young newly hatched larva was taken into the mouth in raw drinking water, penetrated into the tissues of the cheek and set up a focal tissue reaction, which pocketed it off but did not produce actual encystment, since there was adequate space for the worm to move about within the pocket. It is impossible to state how long the worm had been in the tissue pocket, but the stage of development of the female gonads would indicate a period of several months. The worm was small and sexually immature but normal otherwise. Perhaps the "dwarfism" may be attributed to its lodgment in an abnormal warm-blooded host, but there was no indication that the worm was degenerate. Certain it is that the worm had invaded the tissues of a human host, had produced a local tissue reaction and was alive at the time the tumor mass was removed from the patient.

After establishing the identity of the parasite we were able to learn that the patient is an ardent fresh-water fisherman, frequenting nearby sloughs and ponds. On several occasions he drank or washed his mouth with water from such places.

#### SUMMARY

A case of human parasitism by a gordiid worm presumably the species *Gordius robustus*, was observed. We believe this to be the first authentic case of its kind to be reported in the literature.

#### MASSIVE LEFT AURICLE

LOUIS FAUGERES BISHOP JR. M.D. AND ANDREW BABEY M.D.  
NEW YORK

Because of its comparative rarity massive left auricle has stirred considerable interest since its original description in 1901 by Owen and Fenton.<sup>1</sup> We therefore record the following case:

#### REPORT OF CASE<sup>2</sup>

A white American woman, aged 33 married, admitted to Bellevue Hospital, Nov. 22, 1934 complained of pain in the right lower part of the chest and shortness of breath. The distress had commenced two hours before entry was sudden in onset and was not associated with any type of exertion.

Her previous history showed an attack of rheumatic fever at the age of 15 years, and at this time she was confined to bed for seven months, after improving she was told that she had a heart murmur. Following the first attack she had six other episodes of rheumatic polyarthritis, each of which was quite severe, necessitating long periods of bed rest, the last of these attacks occurred four years before entry. For the past ten years she had been taking small doses of digitalis. At no time had there been any definite decompensation. In 1931, three years before entry she had a left hemiplegia.

Her subjective cardiac complaints began about twelve years before, when she noticed marked palpitation on slight exertion or after emotional stress. There had been dyspnea on exertion for about ten years, but it had never been extreme. Six years before her admission to the hospital she had been able to walk to the top of the Statue of Liberty unaided. There had been intermittent ankle edema for about six years and definite orthopnea for many years. For about two years she had had difficulty in swallowing liquids and a slight nonproductive cough.

Physical examination on admission revealed dyspnea, orthopnea and slight cyanosis. Mentally the patient was clear but she talked in a slow drawn-out monotone and there was some dysarthria. The temperature was 99 F., pulse 100 and blood

pressure 120 systolic, 90 diastolic. The thorax was thin and asymmetrical, the left side being more prominent than the right. Two pulsations were noted, both systolic in time, one in the seventh left interspace in the midaxillary line and another in the third right interspace about two finger breadths from the outer edge of the right side of the sternum. A forceful apex impulse of the heart was felt in the seventh inter-



Fig. 1.—The density occupying the lower two thirds of the right side of the chest is the left auricle.

space in the anterior and midaxillary lines. Here too a systolic thrill was felt. On the right, cardiac dullness was noted from the third interspace down merging below with liver flatness. There was a systolic murmur, followed by an early diastolic murmur. The systolic sound was audible, far to the right, across the sternum and under the nipple. The pulmonary second sound was accentuated. The rhythm was totally irregular. Both sides of the chest were hyperresonant except at the right base, where there was impairment of the percussion note, and in the right lower axilla where marked tympany was noted, over the latter area breath sounds and voice were practically absent. The remainder of the chest examination revealed many coarse, bronchial rales.

Except for a tender, nonpulsatile liver, which extended over a hand's breadth below the costal margin, examination of the abdomen was negative. The left upper and lower extremities showed marked wasting.

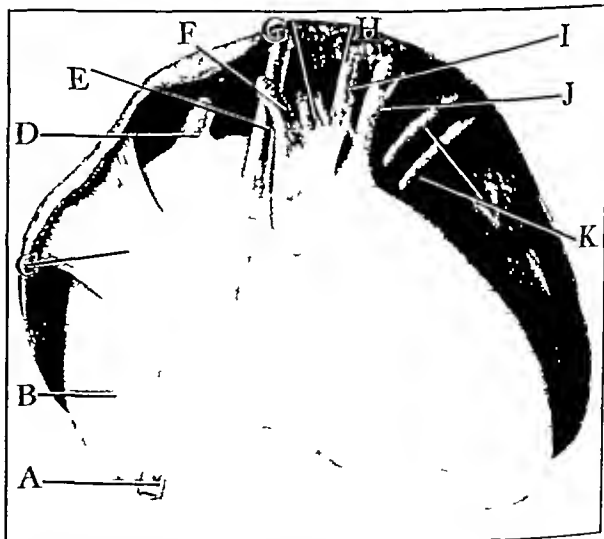


Fig. 2.—Anterior view. A inferior vena cava B left auricle C adhesions between lung and pericardium D pulmonary vein into left auricle E superior vena cava F innominate artery G carotid artery H subclavian artery I arch of aorta J pulmonary artery K pulmonary veins.

Laboratory examinations, including blood chemistry, Wassermann and urine, were negative.

An electrocardiogram showed auricular fibrillation, right axis deviation and bundle branch defect.

On roentgen examination the density occupying the lower two thirds of the right side of the chest was considered to be the left auricle (fig. 1).

<sup>1</sup> Owen I. and Fenton W. J. Clin. Soc. Tr., London 3-4 183 1901.

<sup>2</sup> Case observed in the Fourth Medical Division, Bellevue Hospital, in the service of Charles H. Hammett, M.D., director.

During fluoroscopy, it was noted that the esophagus was compressed and pushed back to the right. The column of barium sulfate was seen to become very thin where the left auricle was compressing the esophagus. With each systolic pulsation of the heart the column of barium moved upward.

The patient was given morphine and oxygen and was rapidly digitalized. In less than twenty-four hours she was extremely comfortable and was no longer dyspneic or orthopneic. Maintenance doses of digitalis were given thereafter, and except for a slight rise in temperature due to an infection of the upper respiratory tract, her course was completely uneventful until December 27, when she suddenly began to fail and died of congestive heart failure (about a month after admission).

The autopsy was performed by Dr W Hutcheson. When the sternal plate was removed the largest part of the thorax was seen to be occupied by an enlarged heart the apex of which was united to the left axillary wall by firm, fibrous adhesions at the level of the seventh rib and the right border of which was in contact with the right axillary wall. There were a moderate number of firm, fibrous adhesions between each lung and the chest wall. There was no fluid in either pleural space.

The heart was removed intact with the lungs. The visceral and parietal layers of the pericardial sac were everywhere united, producing complete obliteration of the pericardial space. On careful examination of the anterior and posterior surface of the heart, the largest part of the cardiac mass was seen to

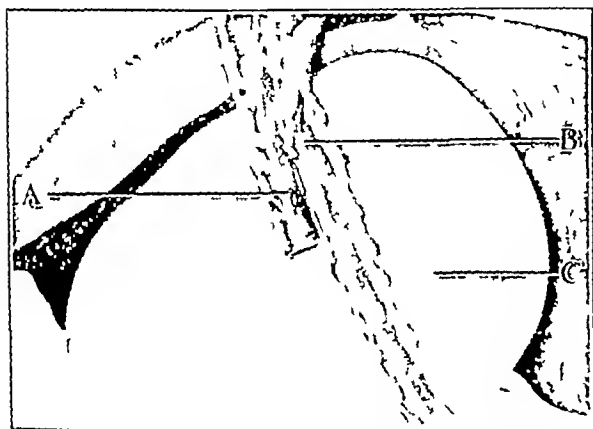


Fig 3—Posterior view. A aorta B esophagus C left auricle

consist of a tremendously dilated left auricle which measured approximately 12 cm in diameter (fig 2). The enlargement of the auricle had taken place particularly to the right so that it was the enlarged left auricle which formed the right border of the heart and was in contact with the right side of the thoracic cage. The part of the left auricle that was visible anteriorly constituted about one half of the anterior aspect of the heart, the remainder consisting of right auricle, right ventricle, and a portion of the left ventricle. The posterior aspect of the heart (fig 3) was formed mostly by the left auricle and the left ventricle and it is from this aspect that one can best appreciate the disproportionate enlargement of the left auricle which was over twice the volume of the two ventricles combined. The capacity of the left auricle as shown by distention of it with water was 1550 cc compared with the left ventricle which held 75 cc. The left ventricle was slightly dilated and hypertrophied moderately. The right side of the heart was not dilated but the right ventricle showed some hypertrophy. When the heart was opened after fixation the endocardium of both auricles and ventricles was seen to be normal throughout. The tricuspid pulmonary and aortic valves were essentially normal. The mitral valve on the other hand as observed from the interior of the left auricle consisted of a sickle shaped opening 4 cm between its two extremities and 6 mm across at its widest point (fig 4). When the mitral valve was opened both leaflets were seen to be extremely fibrosed thickened and stiffened. The edges were rounded, the chordae tendineae were shortened and thickened and there was considerable fibrosis of the apices of the papillary muscles.

The chordae tendineae were short and the valve leaflets were so stiff as to preclude the approximation of the latter, so that an anatomic insufficiency was present. The stiffness of the leaflets likewise prevented them from fully opening out to assume the normal cross sectional area of the mitral orifice, so

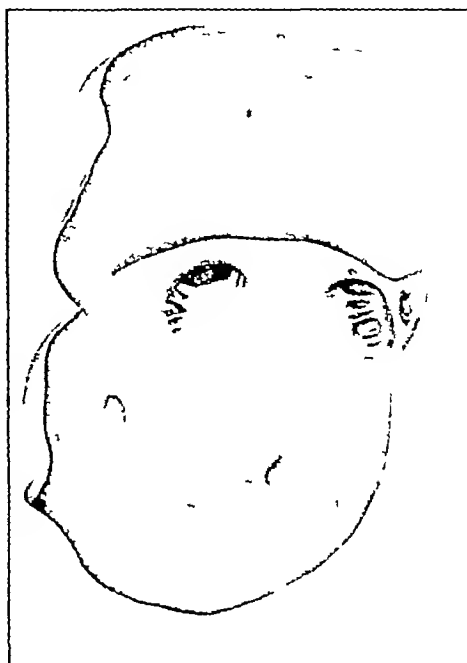


Fig 4—Mitral valve observed from interior of the left auricle.

that some small degree of mitral stenosis was present, as was also shown by the fusion of the two leaflets on either side of the orifice. There was also a firm, apparently partially calcified raised plaque in the posterior leaflet of the mitral valve. The measurements of the free edges of the valves were

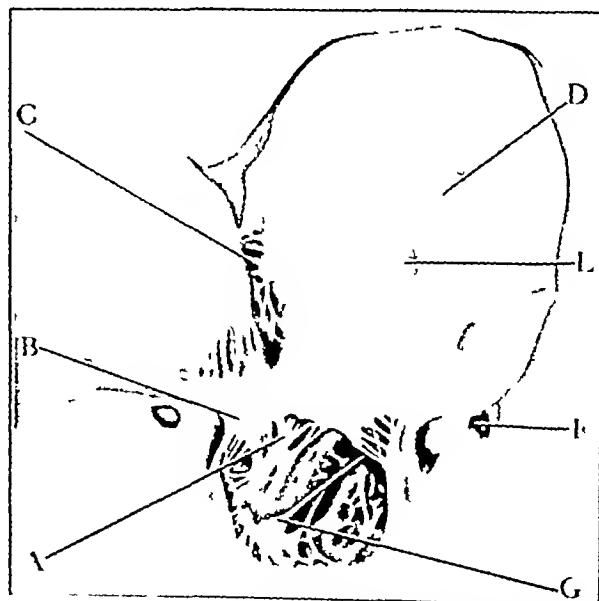


Fig 5—Sagittal view. A thickened, shortened chordae tendineae B sickle shaped opening of mitral valve C auricular appendage D left auricle E aorta F coronary sinus G moderator band

tricuspid 14 cm pulmonary 7 cm mitral 9 cm and aortic 6 cm. The left ventricle was 1 cm thick at its widest portion the right ventricle 6 mm. On section the myocardium of the ventricles showed no fibrosis or other change and the coronary vessels were normal as far as they could be followed.

The lungs were small, crepitation was normal throughout except in the right lower lobe, which was dark red, shrunken and airless. On section, the parenchyma of the entire left lung and upper two lobes of the right was a pinkish white. The cut surfaces of the right lower lobe were moderately dense, reddish and uniform. A moderate amount of anthracotic pigment was present.

The esophagus was normal except that it was somewhat compressed and pushed over to the right by the enlarged left auricle. It lay along the posterior aspect of the left auricle looking something like a thin rubber tube stretched across the surface of an inflated balloon (fig 3). The remainder of the gastro-intestinal tract was not examined.

Microscopic sections were done through the dilated wall of the left auricle. The section of the wall of the left auricle was characterized by a marked thinning of the muscle layer, the myocardium occupying but a small proportion of the entire thickness. A number of blood vessels cut in cross-section and longitudinal section showed no striking change or disease.

#### COMMENT

We wish to emphasize the importance of keeping in mind the phenomenon of a massive left auricle to avoid mistaking this condition not only for effusions of various types but for malignant conditions of the gastro-intestinal tract or mediastinum.

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### Special Article

#### COOPERATIVE CLINICAL STUDIES IN THE TREATMENT OF SYPHILIS SYPHILIS IN PREGNANCY

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Fetal and neonatal death in syphilitic mothers is much greater than in nonsyphilitic mothers. In Bill's<sup>1</sup> obstetric clinic at Western Reserve University it was found that among 6,098 women pregnancy resulted in stillbirth four times as often in syphilitic as in nonsyphilitic women. Moore<sup>2</sup> reports that an untreated syphilitic woman has only one chance in six of bearing a living, healthy child, as compared with three chances in four for a healthy woman. Among the children born alive of syphilitic mothers both the mortality and morbidity rates are much higher than among the children born of nonsyphilitic mothers.

It is difficult to establish a general base line to estimate the extent to which arsenical and bismuth therapy have reduced infant mortality. Sylvester,<sup>3</sup> studying a group of infants with clinically recognizable syphilis from 1901 to 1914, before the Wassermann reaction was employed, estimated that mortality among these cases was approximately 85 per cent within the first year of life. During the period 1915 to 1919, when the serologic blood test for syphilis became generally available and the newly discovered specific drug arsphen-

amine first came into use, the mortality dropped to 33 per cent. Undoubtedly this decrease in infant mortality was influenced not only by the use of the new therapy but, also by the inclusion of infants whose subclinical syphilis had not been detectable before the institution of the Wassermann test. From 1920 to 1925, when, in addition to better diagnostic and therapeutic measures, there were organized syphilis clinics with social service, infant mortality within the first year of life dropped to 21.5 per cent. Incomplete and incomparable though these data are for the specified periods, they indicate a definite decline in the mortality of infants with syphilis. Sylvester further attempted to study the morbidity of infants in these three periods. He reported that a syphilitic child apparently was more susceptible to colds, otitis media, pneumonia and other nonsyphilitic infections than was the nonsyphilitic child. He estimated the morbidity among syphilitic infants in the first period as 85 per cent, in the second period as 50 per cent and in the third period as 35 per cent.

The Cooperative Clinical Group has studied the pooled records from five large syphilis clinics to determine the outcome of pregnancy in treated syphilitic women. This study comprised 3,817 syphilitic women under treatment or observation for six months or more. There were 603 women who had 922 pregnancies after their syphilitic infection. The results of 607 of these pregnancies are known and form the basis for the statements in this paper.

#### SIGNIFICANCE OF A SEROLOGIC BLOOD TEST OF THE MOTHER DURING AND AFTER PREGNANCY

The results of serologic blood tests on syphilitic women during pregnancy give some information as to the chances of transmission of syphilis to the unborn child. Among 167 syphilitic women with a negative blood reaction during pregnancy, 81 per cent were delivered of a living, apparently nonsyphilitic child, in contrast to 57 per cent of the 264 syphilitic women with a positive blood reaction during pregnancy. These data indicate that in the syphilitic woman a negative reaction during pregnancy greatly increases the chances for a living, apparently nonsyphilitic child. It is obvious, however, that the negative status of the serologic blood reaction is insufficient in itself to insure a living, apparently nonsyphilitic child. Undoubtedly there are other equally important factors influencing the transmission of syphilis, since only 81 per cent of the syphilitic mothers with negative reactions were delivered of living, nonsyphilitic infants. In a subsequent analysis of the same cases, disregarding the blood reaction during pregnancy, it was found that adequate treatment of the mothers when begun early in pregnancy resulted in the delivery at term of apparently nonsyphilitic children in 91 per cent of the cases. This treatment factor is considered in more detail in the latter part of this paper. A division of the material by stage of the mothers' infection at the time of conception revealed that among syphilitic women with negative blood reactions during pregnancy the stage of infection apparently was not a definite factor in the transmission of syphilis to the child. On the other hand, among the syphilitic women with positive blood reactions during pregnancy the stage of the mothers' infection was of paramount importance.

The chances for a living, nonsyphilitic child were increased 50 per cent in those cases in which the mother's serologic blood reaction was positive but the infection had passed the early stages before the occurrence of pregnancy. It was found that 31 per cent of

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1. Bill, A. H. Personal communication to the authors.  
2. Moore, J. E. Modern Treatment of Syphilis. Springfield, Ill.: Charles C. Thomas, 1933, pp. 255-254.  
3. Sylvester, P. H. Twenty-Five Years of Congenital Syphilis in Boston. J. A. M. A. 87: 298 (July 31) 1926.

the women with early syphilis who had positive blood reactions during pregnancy bore syphilitic infants. As the duration of the infection increased and the disease became late or latent before conception, the transmission of syphilis to the child decreased to 18.5 per cent.

Regardless of the stage of syphilis, a positive blood reaction during pregnancy is a serious matter. Ten times as many syphilitic children were born when the mother's blood was positive during pregnancy as when it was negative.

From the foregoing facts it is concluded that, in order to insure a living, nonsyphilitic child, it is highly desirable to treat intensively throughout each pregnancy every woman who has ever had syphilis. This procedure should be followed whether the blood reaction during pregnancy is positive or negative or the infection is of short or long duration.

Serologic blood tests of the syphilitic mothers after delivery of 217 living, apparently nonsyphilitic infants showed that 67 per cent had negative blood reactions and 33 per cent positive ones. The results are more striking among those syphilitic mothers who bore living syphilitic infants, as 82 per cent of these had positive blood reactions and 18 per cent had negative ones. Thus, while the positive reaction on the syphilitic mother indicates the probability of transmission of syphilis to the child, the negative reaction on the syphilitic mother does not guarantee the birth of a living, nonsyphilitic child. There may be occasional positive serologic blood reactions on syphilitic mothers of nonsyphilitic children or negative reactions on mothers of syphilitic children, therefore it is always necessary to perform repeated blood tests on the child and to consider all available data before deciding whether or not the child is syphilitic. It is unfortunate that, in this series of cases, information regarding transmission of syphilis to the child is limited to that obtained at birth. In order to rule out syphilis in these children definitely they should be followed during at least the first two years of life.

#### THE SYPHILITIC MOTHER'S TOLERATION OF ARSENICAL TREATMENT

As the kidneys and liver of the pregnant woman are already under some strain, it might be expected that antisyphilitic treatment would be harmful. This, however, was not the case. There was no significant difference in minor arsenical reactions in the pregnant and nonpregnant groups. However, the pregnant woman experienced fewer severe reactions than the nonpregnant one. There were 308 severe arsenical reactions per thousand injections in nonpregnant women as compared with only 0.87 per thousand injections in those pregnant.<sup>4</sup> The pregnant woman was given an average of eighteen injections of arsenicals throughout her whole treatment period while the nonpregnant woman was given nineteen injections. Arsenical dermatitis was twice as frequent and icterus five times as frequent in the nonpregnant as in the pregnant group. Since the pregnant woman apparently stands arsenical therapy as well as or better than the nonpregnant one the physician need not withhold arsenical treatment for fear of irritating the kidneys or for fear of causing other arsenical reactions. Nevertheless, the same vigilance

should be exercised in treating a pregnant woman as any other patient, since there is always some risk involved in antisyphilitic treatment.

#### TREATMENT OF THE PREGNANT SYPHILITIC WOMAN

If the diagnosis is made early, an intravenous injection of arsphenamine (from 0.2 to 0.4 Gm.) or neoarsphenamine (from 0.3 to 0.6 Gm.) should be given every week for from twelve to fifteen weeks, followed by ten weekly injections of either potassium bismuth tartrate (0.2 Gm.), bismuth salicylate (0.2 Gm.) or sodium potassium bismuth tartrate suspended in oil, each dose yielding from 0.05 to 0.1 Gm. of metallic bismuth each. If possible the schedule should be arranged to finish up with an arsenical, and treatment should be continued to term. If the diagnosis is made late in pregnancy, combined arsenical and bismuth treatment is indicated. Even late, inadequate treatment may mean a living, possibly nonsyphilitic child.

#### THE TREATMENT OF HABITUALLY ABORTING SYPHILITIC WOMEN

It is well known today that abortions are not necessarily caused by syphilis. Yet, in a small group of sixty-three syphilitic women who had had two or more abortions previously, 59 per cent bore living, apparently healthy children after having been given antisyphilitic treatment. Such results demonstrate that habitually aborting syphilitic women should be given antisyphilitic therapy throughout their pregnancies.

#### RESULTS OF EARLY AND ADEQUATE TREATMENT IN PREGNANCY

As early as possible in pregnancy the physician should examine every woman for syphilis. The history should be taken carefully and one or more serologic tests made.<sup>5</sup> The sooner syphilis is diagnosed and the earlier the treatment is begun, the better the prognosis for a living, nonsyphilitic child. In the Cooperative Clinical Group material 167 syphilitic mothers received treatment which was begun before the fifth month of pregnancy, and in 218 syphilitic mothers it was delayed until after the fifth month. In the discussion that follows immediately the amount of treatment is not considered, emphasis being placed on the time of beginning treatment. Of the total number of women who began treatment before the fifth month 78.4 per cent bore living, apparently nonsyphilitic children, in contrast with 60.6 per cent in which treatment was begun after the fifth month of pregnancy. There were also more than three times (23.4 per cent) as many syphilitic children born in the group in which treatment was begun after the fifth month as in those beginning treatment early (6.6 per cent). If in addition to beginning treatment early in pregnancy, adequate treatment is given in the form of at least ten or preferably fifteen injections of an arsenical and appropriate heavy metal the effect on the outcome of the syphilitic pregnancy is even more favorable. In such cases 91 per cent of the women were delivered of living, apparently nonsyphilitic children. Even with less than ten injections of an arsenical and appropriate heavy metal when treatment was started before the fifth month of pregnancy, only 4.9 per cent of the mothers gave birth to syphilitic children as compared with 20.7 per cent when this type

<sup>4</sup> In a total of 4,581 arsenical injections given syphilitic women during pregnancy the number of severe arsenical reactions per 1,000 injections was 0.87 with a probable error of 0.293 while among the 587.6 arsenical injections given the syphilitic women never pregnant since their infection, the number of severe arsenical reactions per 1,000 was 1.96 with a probable error of 0.150. The difference in the rate of a severe reaction for these two groups of syphilitic women is more than 2 times its probable error. ( $2.21 \pm 0.114$ )

<sup>5</sup> It should be routine practice to take a serologic test for syphilis as soon as a diagnosis of pregnancy is made and if negative further tests at a late as the seventh month in order to detect an incipient syphilis. A beginning syphilitic infection in the pregnant female may otherwise be undetected.



of treatment was begun after the fifth month of pregnancy. Moreover, in the group of syphilitic mothers who were given at least ten injections of an arsenical but less than ten injections of a heavy metal early in their pregnancy, only 51 per cent bore syphilitic children, as compared with 400 per cent when similar treatment was begun later. The best results, therefore, are obtained by giving the syphilitic woman adequate treatment in the form of at least ten but preferably fifteen arsenical injections and appropriate heavy metal early in pregnancy.

#### VALUE OF INADEQUATE TREATMENT EVEN LATE IN PREGNANCY

If a patient appears late in pregnancy, will some treatment, even though only a little, started at this period, have a protective influence on the unborn child? Further, is the stage of the disease at the time of admission of the syphilitic woman a determining factor in the transmission of syphilis?

In this series of cases there were sixty-eight women with early syphilis who had received no treatment during pregnancy, and of these 34 per cent were delivered of a living, apparently nonsyphilitic child. Among sixty-six women with early syphilis who had received some treatment late in pregnancy, 49 per cent were delivered of a living, apparently nonsyphilitic child. Among those women with early syphilis there was a complete loss of fetal life in terms of miscarriage, abortion or stillbirth in 46 per cent of the pregnancies when no treatment was given, this dropped to 76 per cent when some treatment was given in the late period of pregnancy. The fact that the mother's syphilis had reached the late or latent stage before conception did not alter the necessity for protecting the child through treatment given late in pregnancy. Of seventy-seven women who were admitted with late or latent syphilis and had received no treatment during pregnancy, 47 per cent bore living, apparently nonsyphilitic children, as compared with 66 per cent of the 152 mothers who had received some treatment after the fifth month of pregnancy. Among the late and latent syphilitic women who were untreated during pregnancy, 40 per cent of the children were born dead as compared with only 12 per cent among those women in the same stage of syphilis who had been given some treatment after the fifth month.

These data indicate that, even though the syphilis is discovered late in the pregnancy, treatment from this period up to the termination of the pregnancy results in from three to six times as many living children, depending on the stage of the mother's syphilis.

#### TREATMENT IN PRECEDING PREGNANCY FAILS TO INFLUENCE OUTCOME OF SUBSE- QUENT PREGNANCY

The problem has also been investigated from still another angle by evaluating treatment in 138 syphilitic women who had had one or more preceding pregnancies and who had also a negative serologic reaction at the beginning of or during the pregnancy under consideration. These women were divided into two groups, those who were treated in the present pregnancy and untreated in the previous one, and those who were treated in both the present and the previous pregnancy. The result of the present pregnancy in the two groups of syphilitic mothers with a negative blood reaction indicated that it was the treatment during the present pregnancy that influenced the outcome. Whether treated or not during the preceding pregnancy, the mothers

with a negative blood Wassermann reaction who received treatment during the present pregnancy had 75 per cent of living, apparently nonsyphilitic infants.

Gammeltoft<sup>6</sup> of Copenhagen and others also have investigated this problem and found that the syphilitic mother may be delivered of a syphilitic child many years after the infection. In a pregnancy the risks of infection to the child may be regarded as comparable to those risks of infection transmitted by blood transfusion. It is well known that a syphilitic individual who is no longer capable of transmitting the disease even through sexual contact may, as a donor in a transfusion, give the disease to another. While in such cases the disease is more or less latent in character and a physical examination or serologic test may show nothing, occasionally there may be a few spirochetes in the blood stream. Likewise the pregnant woman may transmit the infection through the placenta to her unborn child long after she has become innocuous to her sex partner.

In the Cooperative Clinical Group material there were a few instances of syphilitic children born as late as ten to eleven years after the mother's infection. In a group of syphilitic mothers who began treatment of their disease in its early stage, the longest time after infection that the disease was transmitted in utero was from eight to nine years (in the case of one child). This mother had been inadequately treated. It is worthy of mention that in women pregnant from one to three years after the infection there were no syphilitic children born to the mothers who had had adequate treatment. The safer procedure then for every mother who has or ever has had syphilis is to take anti-syphilitic treatment throughout each pregnancy. This is believed to be true even though the fifty-two syphilitic mothers in this study who became pregnant after having been considered "cured" had no syphilitic children among those born up to fifteen years after infection.

#### RELAPSE OR PROGRESSION OF SYPHILIS IN ITS RELATION TO PREGNANCY AND STAGE OF INFECTION

The Cooperative Clinical Group studied 2,628 syphilitic women, pregnant and nonpregnant since the infection, in whom a comparison of relapse or progression of the disease could be made. Minimal effective treatment of syphilitic infection has been defined by the Cooperative Clinical Group as at least twenty injections of an arsenical with a like amount of heavy metal. Such a group of adequately treated women who became pregnant after the infection showed clinical progression or relapse of the disease in 41 per cent of the cases. Those women who had not experienced pregnancy after the infection had 71 per cent clinical progression or relapse. With inadequate treatment the respective percentages were 107 and 179. However, a study of the succeeding paragraphs shows that apparently it is the stage at which the syphilitic woman begins treatment and the amount of therapy administered rather than the pregnancy that most influences her further clinical progression or relapse.

Among the nonpregnant women who were adequately treated in the early stages of syphilis, about one half of the clinical progressions or relapses were of the central nervous system, while not a single progression of this type was seen in a similar group of patients who became pregnant after the infection. However, except for the possible protection pregnancy may afford from

<sup>6</sup> Gammeltoft, S. A. Syphilis and Pregnancy. *Am J Obst & Gynec.* 16:747 (June) 1928.

invasion of the central nervous system during early syphilis, the adequacy of early treatment is the principal factor in the prevention of progression and relapse. The pregnant woman who is adequately treated during early syphilis has four times as great a chance of avoiding clinical progression or relapse as one inadequately treated.

In the adequately treated woman with latent syphilis it was apparent that pregnancy offered the patient some protection against the development of clinical progression or relapse of syphilis (from 0.7 to 5.4 per cent). However, this protection was insufficient to manifest itself in the absence of an adequate amount of therapy. This study does not permit one to speak in definite terms as to the part which pregnancy plays in the control of late syphilis. The data indicate that in patients admitted with late syphilis who had experienced a pregnancy since the infection there was a slightly higher percentage of progression and relapse than in those who had not been pregnant since infection. However, it is quite possible that in those patients the syphilitic infection may have been so well established that the minor inhibitive influence of pregnancy was not recognizable or was lost among the unavoidable changes of the progressive process. It is planned in a forthcoming paper to study more completely the factors that influence progression and relapse in the patient with late syphilis.

#### SUMMARY AND CONCLUSIONS

1 The data show that congenital syphilis is practically a preventable disease. Its prevention is dependent on the routine, early and repeated use of the serologic blood test on every pregnant woman and on adequate early treatment once the diagnosis of syphilis has been made.

2 A positive blood test during pregnancy is a serious matter to the fetus. Ten times as many syphilitic children were born when the syphilitic mother's blood was positive during pregnancy as when it was negative.

3 The pregnant syphilitic woman was found to tolerate antisyphilitic treatment as well as or better than the syphilitic woman who had not been pregnant since infection.

4 There is evidence that habitually aborting syphilitic women are capable of producing living, apparently nonsyphilitic children when given specific treatment throughout each pregnancy.

5 Many more nonsyphilitic living children were born when antisyphilitic treatment was begun before the fifth month of pregnancy than when therapy was delayed. This advantage was increased if the treatment during pregnancy was not only early but adequate, that is, at least ten, preferably fifteen injections of arsphenamine and appropriate heavy metal.

6 If an early syphilis appears late in pregnancy, some treatment begun at this period and continued up to termination of pregnancy, even though it is only a small amount, will be of value in the production of a living child. To those women with early syphilis who were treated after the fifth month of pregnancy only 7.6 per cent of the children were born dead, whereas among a similar group of women with early syphilis to whom no treatment was administered during pregnancy the loss of life was 46 per cent.

7 Treatment during a preceding pregnancy is insufficient protection for the present pregnancy, even though the syphilitic woman has a negative blood reaction. It is necessary to treat her throughout each pregnancy to insure a living nonsyphilitic infant.

8 The important factors in controlling clinical progression and relapse in the syphilitic woman are the stage of syphilis on beginning treatment and the amount of therapy administered, rather than the pregnancy. The possible exception is the apparent protection pregnancy affords the patient with early syphilis in avoiding an involvement of the central nervous system.

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### PEVELY EVAPORATED DAIRY MILK

(ADDED COD LIVER OIL CONCENTRATE)

*Manufacturer*—Pevely Dairy Company, St. Louis

*Description*—Evaporated milk containing 28 U. S. P. vitamin D units (vitamin D concentrate prepared from cod liver oil) per ounce (31 per fluidounce).

*Manufacture*—A definite quantity of cod liver oil concentrate (Vitec, Vitec Laboratories, Inc.) is introduced into evaporated milk prepared by the standard procedure (THE JOURNAL, April 16, 1932, p. 1376) as the milk leaves the evaporating pans. The mixture is homogenized, cooled and thoroughly sterilized by the usual methods.

*Claims of Manufacturer*—Antirachitic when used to provide all milk needs of the normal infant.

### CELLU PRUNE PLUMS PACKED IN WATER WITHOUT ADDED SUGAR OR SALT

*Distributor*—The Chicago Dietetic Supply House, Inc., Chicago

*Packer*—Hunt Brothers Packing Company, San Francisco

*Description*—Canned cooked prune plums packed in water without added sugar or salt.

*Manufacture*—Ripe plums are spray washed (defective fruit is removed), graded, again spray washed, placed in cans and covered with water. The treatment thereafter is essentially the same as for Cellu Blackberries Packed in Water Without Added Sugar or Salt (THE JOURNAL, Sept. 28, 1935, p. 1039).

*Analysis* (submitted by distributor) —

|  | per cent       |
|--|----------------|
| Stones of plums                                      | 6.5            |
| Stone of plums and liquid                            | 3.4            |
|  | Edible portion |
| Moisture   | 89.4           |
| Total solids   | 10.6           |
| Ash  | 0.3            |
| Fat (ether extract)                                  | 0.1            |
| Protein (N x 6.25)                                   | 0.5            |
| Reducing sugars as invert sugar                      | 7.4            |
| Sucrose  | 0.1            |
| Crude fiber  | 0.2            |
| Carbohydrates other than crude fiber (by difference) | 9.5            |

*Calories*—0.4 per gram, 11 per ounce.

*Claims of Distributor*—For diets in which sweetened fruit is prohibited.

### THAMES VALLEY UNSWEETENED EVAPORATED MILK

*Distributor*—The Van der Grint & Products Company, Norwich, Conn.

*Packer*—Land O'Lakes Creameries, Inc., Minneapolis

*Description*—Canned unsweetened evaporated milk the same as Land O'Lakes Unsweetened Evaporated Milk (THE JOURNAL, July 28, 1934, p. 260).

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SATURDAY, FEBRUARY 8, 1936

## DEFINITION AND ETIOLOGY OF ECZEMA

The definition of eczema given in a recent dictionary is "An inflammatory skin disease with vesiculation, infiltration, watery discharge, and the development of scales and crusts. The lesions vary much in character, and the disease is frequently attended with restlessness and fever and other constitutional disturbance, as well as by local itching and burning." The present controversy as to the origin and nature of eczema is thus, as it should be in a dictionary, neatly side stepped. The legitimate difference of opinion as to what eczema includes has been illustrated in a recent issue of the *British Journal of Dermatology and Syphilis*.

Adamson<sup>1</sup> believes that there is a distinct type of eruption for which the name "eczema" should be reserved as distinguished from "dermatitis." It consists of circumscribed areas which are red, raised and studded with weeping points, or with small dome-shaped crusts which may easily be mistaken for small papules unless closely inspected. If found early it appears as a cluster of pinhead-sized vesicles on a red and slightly raised base. The vesicles are easily broken by friction or scratching, and the more usual appearance of weeping points of small grouped crusts is then produced. This lesion results from an edematous swelling of the whole thickness of the cellular epidermis itself. The minute vesicles, weeping points or crusts are small intradermally formed pools of serum which have come up to the surface and are quite distinct, Adamson believes, from the larger superficially formed vesicles and blister-like bullae of a dermatitis. When the history can be traced back to the beginning, the condition is found to have started at one particular area as the result of the application of some local irritant. It may afterward be limited to this site or it may subsequently appear in distant parts, the skin having become everywhere hypersensitive to external irritants as a sequel to the primary eczematization. Adamson has never been convinced that internal derangements have any part in the causation of eczema.

With this view of the narrow limits of true eczema, Ingram<sup>2</sup> is unable to agree, although including the condition described as one form of the disorder. He believes that there is a clear and precise character about the eczematous reaction, manifest in the course of its development, no matter what the end result may be. The histologic picture of the reaction is distinct and always capable of reproduction. This character depends on the fact that the reaction emanates essentially from the capillary loops of the papillae and that the papillae and their capillaries are structures of uniform size. In the mildest form of capillary dilatation it is seen as a punctate erythema. The exudation of fluid occurs into and about the papilla as a humping of the epidermis—a pinhead-sized papule and the traveling of that exudation to the surface as a vesicle of like size. Finally the discharge, through an "eczema well," a pinhead-sized puncture of the epidermis, leads to the papillary fount of the reaction.

In other words, the reaction from the clinical point of view is a uniform pinhead-sized eruption, and that, in Ingram's opinion, should be the definition of eczema. If to the description is added the characteristic element of itching, the definition seems adequate and absolute.

There are two essential features in etiology common to all cases of eczema, Ingram believes. These are a background of physiologic hypersensitiveness or instability in the skin and a provocative external agent. That eczema is always dependent on a physiologically sensitive skin is obvious, because it is always provoked by an irritation that will not provoke the skins of normal persons. Furthermore, evidences of such physiologic instability are always forthcoming on examination of patients with eczema if examined as a whole. It may in fact be brought into evidence at such phases as puberty, the menopause or temporary depressions of health from influenza, pregnancy, confinement or shock. There must also be, however, some external provocation of one kind or another. This is, of course, well known, but one other factor, autosensitization cannot be overlooked. It is certain that some patients readily develop specific sensitiveness to the altered serum of their own exudates whether they reach the surface or not. If shed on the surface it will act as a further external provocative cause of eruption, if reabsorbed into the blood stream it may determine sensitiveness in distant parts.

The views expressed in these two papers regarding the definition and etiology of eczema furnish good evidence of the still divergent views of this disorder. Most physicians probably still use the term in a loose way. Pending closer agreement among authorities they would do well to limit the application of the term eczema to one or the other of the conditions described.

1 Adamson H. G. Eczema, Its Definition and Its Etiology. *Brit. J. Dermat. & Syph.* 47: 497 (Dec.) 1935.

2 Ingram J. T. Definition and Etiology of Eczema. *Brit. J. Dermat. & Syph.* 47: 502 (Dec.) 1935.

## URINARY CALCULI IN BONE DISEASES

The possibility of an etiologic relationship between chronic bone disease and the formation of urinary calculi was first suggested more than a hundred years ago.<sup>1</sup> At that time it was noted that the injury of vertebrae may be followed by the formation of renal calculi. Since then a number of cases have been recorded in which formation of urinary calculi has occurred subsequent to injuries or to diseases of various bones. The period following the World War developed reports of this type presumably because of the increased incidence of bone injury and disease from gunshot wounds and amputations. Recently<sup>2</sup> the literature on the subject has been reviewed and fourteen additional cases have been described. Urinary calculi were found in patients with such varied bone diseases or conditions as osteomyelitis, fractures of long bones, fractures of the pelvis, amputations of the extremities, tuberculosis of the hip joints, arthritis deformans associated with osteitis deformans, and scoliosis. In all cases of urinary lithiasis, information concerning previous bone injury or disease should be sought and carefully considered from an etiologic point of view. The association between the two conditions appears to be more than accidental.

Several hypotheses have been advanced to explain this phenomenon. One investigator<sup>3</sup> has stressed the role of prolonged immobilization for fractures and wounds, especially in chronic suppurating lesions involving the bones and subsequent infection of the urinary tract. The bacteria promote the decomposition of certain constituents of the urine, thus producing an alkaline reaction, which, as is well known, results in the precipitation of calcium salts. Another authority<sup>4</sup> emphasizes the importance of disturbances in the metabolism of calcium and phosphorus. It is pointed out that the appearance of urinary calculi in some cases of rickets, osteitis deformans, osteomalacia, osteitis fibrosa of von Recklinghausen, and osteitis fibrosa cystica associated with hyperparathyroidism appears to be dependent on a disturbance of the normal relationship between calcium and phosphorus. The increase in urinary calcium observed in hyperparathyroidism for example may lead to a change in the colloid-crystalloid equilibrium of the urine and thus favor the precipitation of certain urinary constituents. Possibly both the foregoing factors may be involved indeed the same general factors that apparently control the normal calcification of bone, namely, local hydrogen ion concentration, carbon dioxide tension and perhaps the enzyme

phosphatase, are also fundamentally concerned in the deposition of calcium in the form of urinary calculi.

This interesting conception of the etiology of urinary calculi in chronic bone diseases is obviously of importance in pointing the way to a logical type of therapy. The control of the bone disease or injury is, of course of primary importance. However, careful attention should be directed also to the diet of the patient. The dietary should supply sufficient amounts of calcium and phosphorus in the proper ratio for most efficient physiologic utilization.

## BLOOD SUGAR AND LACTOSE IN MILK

Milk is a true secretion, it is the product of synthesis by the secreting epithelium of the mammary gland. Casein, lactose and milk fat are the characteristic chemical compounds produced by this activity, and they are made from the raw materials presented in the blood. According to current views, milk protein is produced from the amino acids of the blood, milk fat arises from blood lipids which in turn originate either in the fats or in the carbohydrates in the food, and lactose is synthesized from the dextrose of the blood. Because of the great biologic and economic significance of lactation as well as the ready accessibility of the related structures for experimental study, much evidence is available on this phase of the reproductive cycle. One feature of lactation is the essential invariability of the composition of milk. The quantity of milk produced can be changed in various ways, but only to a relatively insignificant extent can the quality be altered. This uniformity of the composition of milk is emphasized again in a recent contribution by Tolstoi.<sup>1</sup>

The studies were carried out on lactating diabetic patients about two weeks post partum. Five subjects were given 100 Gm of dextrose by mouth before breakfast, and samples of blood and of breast milk were obtained after one-half, one, two and three hours. In every instance there occurred a sharp increase in the concentration of dextrose in the blood. On the other hand, the level of lactose in the milk remained at a strikingly uniform level throughout the experimental period. In four other cases insulin was given and the lactose determined in the milk when the blood sugar had reached a low level. Again there was little if any variation in the concentration of lactose in the milk.

The extent to which the existing abnormality of metabolism in the subjects employed influenced the results is difficult to estimate. The second series with insulin seems to represent a condition of essentially normal metabolism. Nevertheless the studies offer evidence for an effective and characteristic activity on the part of the mammary gland as far as the maintenance of a uniformity in composition of the milk is concerned. Milk production is a severe drain on the organism; ordinarily there appears to be a prompt but transient

<sup>1</sup> Costello W. B. Case of Stone in the Bladder from Injury to the Loins. *Lancet* 2: 109, 1812.

<sup>2</sup> Goldstein A. E. and Abeshouse B. S. Urinary Calculi in Bone Diseases. *Arch. Surg.* 31: 943 (Dec.) 1935.

<sup>3</sup> Elvestaadt J. S. Certain Tangible Factors in the Etiology of Urinary Calculus. *Tr. Chicago Urol. Soc.* 1: 65, 1931.

<sup>4</sup> Squier J. B. Calculous Disease of the Kidneys and Ureters. In: *Lewis's Practice of Surgery*. Hagerstown Md. W. F. Prior Company, 1931, chapter 10.

hyperglycemia after birth of the young,<sup>2</sup> and parathyroid activity is said to be stimulated, thus providing in part for the mobilization of calcium.<sup>3</sup> These are compensatory devices for the unusual loss of material by way of the mammary secretion and illustrate the extent to which the body makes adjustments in order to insure an optimal food for the early nutrition of the young

## Current Comment

### LIP STICK DERMATITIS

From time to time attention has been directed in these columns to the fact that the contact of certain substances with the skin may ultimately produce sensitization followed by definite symptoms of dermatitis.<sup>1</sup> The list of offending agents has now assumed considerable length. In addition to certain rubber bases in adhesive plaster, such substances as butesin picrate, lip stick, lip rouge, perfumes, leather hat bands, dyes from toilet seats, and solvents from shoe dyes have been reported as etiologic agents in contact dermatitis. Recently<sup>2</sup> another case of lip stick dermatitis has been described and an attempt was made to determine the identity of the causative agent. The patient was sensitive to two shades of lip stick of a certain brand but showed no reaction to other kinds tested. In general, lip sticks may contain the following substances: white wax, hydrogenated oil, theobroma oil, castor oil, hydrous wool fat, white petrolatum, fluorescein derivatives, preservative, coloring matter and perfume. Patch tests on the arm were made on the patient and on normal control subjects to detect sensitivity to the individual ingredients of the lip stick. The oleaginous base and a number of commonly used aniline dyes gave negative results. The application of the perfume, however, either alone or with the other ingredients, produced a reaction consisting of a vesicular and erythematous patch, thus indicating that the perfume was the cause of the dermatitis. Further tests were made in which the various possible components of the perfume were used, including ambergris, civet, castor, musk, iris concrete, alpha ionone, methyl ionone, rose Bulgarian, methyl heptene carbonate, and synthetic violet flowers. The patient showed a marked reaction to the methyl heptene carbonate, as did nineteen of the thirty-eight control women. In all cases negative responses were obtained with the other ingredients tested, with the exception of mild erythematous reactions to castor and to musk in two of the control subjects. Thus it appears that the presence of methyl heptene carbonate in the perfume of the lip stick produced the dermatitis in the patient in question. Undesirable reactions of the foregoing type emphasize the urgent need for careful experimental study by the manufacturer to detect pos-

sible deleterious effects of the ingredients of proprietary preparations to be applied to the skin, before such substances are released for general use

### CARBON DIOXIDE IN PRESERVATION OF FISH

The important position of fish and fish products in the diet has been emphasized in recent years by the observation that fish oils are potent sources of vitamins A and D, the fat soluble food accessories. One of the problems in the fish industry is concerned with the deterioration of the flesh before the catch can be brought into port and adequately treated. Frequently it is several days from the time the fish are landed until their disposal. Fish is one of the most perishable of all foodstuffs. Therefore, any improvement in methods of preventing deterioration is of physiologic and economic importance. Interesting progress in preserving fresh fish has recently been achieved by the use of carbon dioxide. The United States Bureau of Fisheries has conducted a study<sup>1</sup> of the feasibility of using carbon dioxide in the handling and transportation of fresh fish under commercial conditions obtaining in the United States. The investigation was restricted to one species, the haddock, this being fairly representative of nonfatty fish and being caught in larger quantities in this country than any other species of the type. The authors were particularly interested in determining the value of carbon dioxide during the relatively short time between the landing and the consumption of the catch. In each series of experiments the fish were divided into two lots, one was designated as the control and was packed in ice without carbon dioxide, and the other was stored with both ice and gas. At intervals the fish or the fillets were withdrawn from each group and subjected to chemical tests and bacterial counts. Beginning about the third day after storage, the haddock stored in carbon dioxide were noticeably in better condition than those packed in ice alone. In a week or more the difference was decidedly evident. This beneficial effect of the gas was manifested only when used with haddock just passing out of rigor mortis, fish in rigor mortis were not greatly benefited by carbon dioxide storage as long as rigor persisted. As no rise in bacterial count on decomposition occurs until after rigor mortis has passed, it is not to be expected that an atmosphere of carbon dioxide, which retards decomposition by reducing bacterial growth and action, would be of any definite value as long as the fish remains in rigor mortis. Studies conducted on fillets indicated that these specially prepared fish can also be greatly benefited if carbon dioxide is used in their storage. The obvious value of methods designed to perpetuate the freshness of fish adds significance to this government research project and should lead to attempts to preserve fish not only after landing but also on board fishing vessels. This problem has particularly great economic and public health significance in fishing regions, in which often a week may elapse between the time the fish are caught and the time they are landed by the fishing vessel.

2 Veigs E. B. *Physiol. Rev.* 2: 204 (April) 1922  
3 Hart E. B. *Nutrition and Milk Production* J. A. M. A. 99: 152 (July 9) 1932  
1 *Skin Irritants in Adhesive Plaster* J. A. M. A. 105: 603 (Aug 24) 1935  
2 Baer H. L. *Lip Stick Dermatitis* Arch. Dermat. & Syph. 32: 726 (Nov.) 1935

1 Stansby M. E. and Griffiths F. P. *Indust. & Engin. Chem.* 27: 1452 (Dec.) 1935



## Association News

### RADIO BROADCASTS

The American Medical Association broadcasts over WEA, the Red network instead of the Blue, as formerly, and certain additional stations of the National Broadcasting Company at 5 p. m. eastern standard time (4 o'clock central standard time, 3 o'clock mountain time, 2 o'clock Pacific time) each Tuesday, presenting a dramatized program with incidental music under the general theme of "Medical Emergencies and How They Are Met." The title of the program is "Your Health." The program is recognizable by a musical salutation through which the voice of the announcer offers the toast "Ladies and gentlemen, your health!" The theme of the program is repeated each week in the opening announcement, which informs the listener that the same medical knowledge and the same doctors that are mobilized for the meeting of grave medical emergencies are available in every community, day and night for the promotion of the health of the people. Each program will include a brief talk dealing with the central theme of the individual broadcast.

**Red Network**—The stations on the Red network of the National Broadcasting Company are WEA, WEEL, WTIC, WJAR, WTAG, WSH, KYW, WFBR, WRC, WGY, WBN, WCAE, WTAM, WWJ, WMAQ, KSD, WHO, WOW, WDAF.

**Pacific Network**—The stations on the Pacific network are KGO, KPO, KFI, KGW, KOMO, KHQ, KFSD, KTAR.

The next three programs are as follows:

February 11 Little Tips on Home Hygiene W. W. Bauer M.D.

February 18 Heart Disease Morris Fishbein M.D.

February 25 Crippled Children W. W. Bauer M.D.

## Medical News

(PHYSICIANS WILL CONFER A FAVOR BY SENDING FOR THIS DEPARTMENT ITEMS OF NEWS OF MORE OR LESS GENERAL INTEREST SUCH AS RELATE TO SOCIETY ACTIVITIES, NEW HOSPITALS, EDUCATION, PUBLIC HEALTH, ETC.)

### ARIZONA

**Society News**—Dr. Alvy N. Crain, Phoenix, was chosen president of the Arizona Public Health Association at its recent annual meeting.

**Tuberculosis Preventorium in the Desert**—A school for children who are predisposed to tuberculosis has been opened in an abandoned Civilian Conservation Corps camp in the desert fifteen miles from Tucson. The school has been financed with WPA funds, the *New York Times* reported January 20 and within thirty days will be caring for 150 boys and 212 girls, it is expected. Outdoor exercise, proper diet, rest and health supervision will be combined with school studies. A large proportion of the children are from families of war veterans, it was stated.

### COLORADO

**Veteran Practitioners Honored**—Life memberships on the medical staff of Beth-El Hospital, Colorado Springs, were given to Drs. Charles F. Gardiner, John H. Hereford, James H. Madden and Henry M. Ogilbee January 14, at the annual meeting of the staff, in appreciation of their services to the community and to their profession. All the physicians have completed fifty years in the practice of medicine.

### DELAWARE

**State Journal Copyrighted**—Beginning with the January issue the *Delaware State Medical Journal* will be copyrighted to prevent misuse or misquotation of its contents.

**Academy Meetings**—Dr. Leonard G. Rowntree, director of the Philadelphia Institute of Medical Research, addressed the Delaware Academy of Medicine in Wilmington January 9 on the pineal and thymus glands with special reference to recent research. Dr. George W. Crile of Cleveland spoke before the academy February 7 and Dr. Emil Novak, associate professor of obstetrics, University of Maryland School of Medicine, Baltimore, will discuss physiology of the female sex cycle March 13.

## DISTRICT OF COLUMBIA

**Medical Bill in Congress**—*Bill Introduced* H. R. 10717, introduced by Representative Randolph, West Virginia, proposes to direct the board of optometry to examine Welton B. Hutton for a limited license to practice optometry in the District of Columbia.

**Lecturers on Public Health**—George Washington University School of Medicine has announced the addition to the faculty of the newly established course in public health teaching of Drs. George W. McCoy, Rolla E. Dyer, Edward Francis, Charles Armstrong and Robert Olesen, all of the U. S. Public Health Service, with the title of professorial lecturer in preventive medicine. The appointment of Ralph W. Barris, Ph.D., as assistant professor of anatomy at the school of medicine was also announced.

**Personal**—Dr. John S. Arnold, for thirty-two years a member of the health department of the Medical Society of the District of Columbia, has retired from that position and has returned to private practice, it is reported.—Dr. Arthur C. Christie was reelected president of the board of trustees of American University recently.—Dr. Archibald Barklie Coulter has been appointed director of the bureau of tuberculosis of the health department of the district on a part time basis. Dr. Coulter was recently named tuberculosis coordinator of the district.

## GEORGIA

**Physician Honored**—Dr. Eugene E. Murphey, for twenty-five years a member of the board of health of Augusta, was named commissioner emeritus of the board at a meeting, January 10. Dr. Murphey graduated from the University of Georgia School of Medicine in 1898. He was president of the board of health and ex officio commissioner of health of Augusta from 1908 until 1933 with the exception of eighteen months in the army during the World War, when he was chief of the medical service at the base hospital, Camp Gordon. He has served as president of the State Medical Association of Georgia and of the Georgia Public Health Association. He is now president of the Augusta-Richmond Tuberculosis Association and professor of clinical medicine at his alma mater.

## IDAHO

**Society News**—Drs. Charles B. Ward and Paul G. Hothow, Seattle, addressed the South Side Medical Society recently in Twin Falls on "Practical Points in Treatment of Cancer" and "Recent Advances in Surgery of the Sympathetic Nervous System" respectively.

## ILLINOIS

**Clinic in City Hall**—As part of a recently established plan to provide indigents and low income families in Peoria with more adequate medical service, newspapers report that the city hall has made available two rooms for the newly created Peoria Medical Clinic. Physicians of the city have agreed to give their services gratuitously through the clinic, which will be financed with appropriations from the Community Fund and county agencies. The Community Fund has stipulated that an executive committee of physicians and lay persons be established.

**Society News**—Dr. Daniel H. Levinthal, Chicago, discussed "Treatment of Poliomyelitis in the Convalescent Stage" before the Bureau County Medical Society in Spring Valley, February 4, he also showed a motion picture on "Reconstruction Surgery for Residual Paralysis Following Poliomyelitis."—Speakers before the Carroll County Medical Society, January 30 were Drs. John R. Harger and Clarence A. Neymann, Chicago, on "General Practitioner and the Acute Abdomen" and "Modern Concepts of the Classification of Nervous and Mental Diseases and Their Treatment" respectively.—At a meeting of the Christian County Medical Society, January 30, Drs. Garwood C. Richardson and William B. Serbin, Chicago, discussed recent advances in obstetrics and obstetric hemorrhages respectively.—Dr. William T. Coughlin, St. Louis, discussed "Cancer of the Breast" before the Macoupin and Montgomery county medical societies in January in Carlinville.

## CHICAGO

**Educational Campaign in Mental Hygiene**—The committee for mental hygiene of the Chicago Medical Society is arranging a special educational program on mental hygiene for lay persons. Radio talks, newspaper articles and addresses for parent-teacher meetings will be used and arrangements have been made with Dr. Edward I. Dombrowski, manager, officer of the Chicago State Hospital, to hold clinics for the branches of the Chicago Medical Society.

**In Memory of Harry Eugene Kelly**—A resolution was adopted by the Chicago Medical Society, expressing regret in the death of Harry Eugene Kelly, for several years an attorney for the Chicago Medical Society. Mr. Kelly, who died January 14, was instrumental in constructing and having passed the Illinois medical practice act in 1923. He presented a paper entitled "Regulation of Physicians by Law" before the Congress on Medical Education and Hospitals of the American Medical Association in 1924.

**Society News**—Speakers before the Chicago Society of Internal Medicine, January 27, were Drs. Edmund F. Foley, Robert W. Keeton, Duane Darling and Aaron B. Kendrick, Ph.D., on "Alterations in Serum Proteins as an Index of Liver Failure"; Drs. William A. Brans and Jacob S. Golden, "Clinical Significance of Venous Pressure," and Carl A. Dragstedt, "An Experimental Study of the Mechanism of Anaphylaxis."—A joint meeting of the Chicago Tuberculosis Society and the Chicago Roentgen Society, January 9, was addressed by Drs. Robert S. Berghoff and Hollis E. Potter on "Diagnostic Value of X-Rays in Diseases of the Chest" and "Importance of the Caseous Lesion in Tuberculosis," respectively.—The Chicago Pathological Society was addressed, January 13, among others, by Dr. Harold R. Ostrander on "Multiple Heterogenous Primary Malignant Tumors in One Host," "Hypernephroma of the Kidney and Carcinoma of the Prostate."

### INDIANA

**Society News**—The Carroll County Medical Society was addressed in Burlington, January 9, by Dr. John E. Owen, Indianapolis, on "Appendicitis in Children."—At a meeting of the Fort Wayne Medical Society, January 7, Drs. Harold D. Caylor and Allen A. C. Nickel, Bluffton, discussed hyperparathyroidism.—Dr. John H. Hare, Evansville, read a paper on the common types of insanity and their diagnosis before the Gibson County Medical Society in Princeton, January 13.—At a meeting of the Putnam County Medical Society in Greencastle, January 14, Dr. Gerald W. Gustafson, Indianapolis, spoke on toxemias of pregnancy.—The Kosciusko County Medical Society was addressed in Warsaw, January 14, by Dr. John R. Baum, Warsaw, on "Carbohydrate Metabolism."

### MARYLAND

**Report on Communicable Diseases**—Provisional figures released by the State of Maryland Department of Health reveal that there was less communicable disease in Maryland in 1935 than for several years. There were 39,171 such cases in 1935 as compared with 63,089 in 1934, 39,781 in 1933 and 42,652 in 1932. The decided increase in 1934 was attributed to the state-wide occurrence of measles and to increases in the pneumonias. Poliomyelitis and meningitis caused major concern in the state in 1935 with totals, respectively, of 107 and 217 cases as compared with twenty-seven and fifteen in 1934. Increases were noted for syphilis, scarlet fever, typhoid and tuberculosis, while reductions were recorded for pneumonia, whooping cough, diphtheria, undulant fever and tularemia.

### MASSACHUSETTS

**Personal**—Dr. Karl V. Quinn, formerly assistant superintendent of the Belchertown State School, Belchertown, has been appointed assistant commissioner of mental diseases for Massachusetts. Dr. Quinn graduated from Queens University Faculty of Medicine in 1924. He has been at the Belchertown school since 1926.—Dr. Barbara T. Ring, Arlington, was given an honorary life fellowship in the New England Society of Physical Therapy, recently, as a tribute to the late Dr. Arthur H. Ring and for their contributions to the activities of the society.—Drs. Isador H. Coriat and Abraham Myerson, Boston, have been inducted as members of the Jewish Academy of Arts and Sciences.—Dr. Edmund H. Stevens, Cambridge, observed his ninetieth birthday, January 2.

**Sickness Among the Unemployed**—Unemployed persons as a group are not as healthy as the employed, according to a study of the entire population of Boston over a six months period, made by faculty members of Harvard University. The study is a part of a survey of unemployment conditions in Massachusetts conducted by various members of the Harvard faculty for the state department of public welfare. The unemployed have proportionately more illness than the part time or full time employed. But the group with the greatest proportion of sickness is the not-seeking-employment class, which includes the young, the housewives, the aged and the chronic sick. The unemployed have more serious illnesses than the employed and receive proportionately more medical care, free or paid, than any other group of the city's population. The

temporary and part time employed have the largest number of cases with no medical care. The report further states that the unemployed form the majority of free outpatient and inpatient hospital cases. About one out of every two cases of illness in the city has paid medical care, about one of every three receives free treatment and one out of six has no outside medical treatment. Private physicians care for about half of the city's sick (48.1 per cent). Free private physician cases (13.2 per cent) form only a small proportion of the total private physician cases. About one out of every two cases of sickness is treated by a private physician and one out of three by hospitals. In making the survey, illness was considered as any sickness which incapacitates a person for at least two days. Figures were taken from the unemployment census survey for the state, made by the CWA, showing the illnesses of 769,504 persons in greater Boston during the last six months of 1933. In this group 68,047 sick persons reported 76,073 cases of illness for the entire period, averaging 1.1 case of illness per person. In 76,073 cases of illness no medical care whatever was received in 12,201, or 16 per cent.

### MINNESOTA

**Society News**—At a meeting of the East Central Minnesota Medical Society, recently, speakers were Drs. Everett C. Hartley, St. Paul, on "Clinical Observations on the Use of Endocrines in Obstetrics and Gynecology"; Everett K. Geer, St. Paul, "Diagnosis and Treatment of Asthma," and Robert G. Allison, Minneapolis, "Recent Developments in the Treatment of Malignancy by Deep X-Ray Therapy."—The Hennepin County Medical Society was addressed, January 29, by Drs. Benjamin J. Clawson, Minneapolis, and Ernest S. Mariette, Oak Terrace, on "Allergy and Resistance in Tuberculosis" and "Tuberculosis Problem Among Nurses in a Tuberculosis Sanatorium," respectively. February 3, Dr. Karl A. Menninger, Topeka, spoke on "Emotional Factor in Hypertension," and February 5, Dr. Russell L. Haden, Cleveland, on "Clinical Deficiency Disease."

**County Officers' Conference**—The annual county officers' conference of the Minnesota State Medical Association will be held at the Lowry Hotel, St. Paul, February 29. Social security and the social security act will be the theme of the program. Speakers at the conference will include Dr. William W. Bauer, director, Bureau of Health and Public Instruction, American Medical Association, Chicago; Mr. Victor Christgau, WPA administrator for Minnesota, and Mr. B. E. Youngdahl, director of SERA, Dr. Monte C. Piper, Rochester; Mr. J. H. Baker, executive secretary, Hennepin County Medical Society; Dr. Ludwig L. Sogge, Windon; Dr. William F. Braasch, Rochester; Dr. Albert J. Chesley, state health officer; Dr. Theodore H. Sweetser, Minneapolis; Dr. Edward A. Meyerding, St. Paul, secretary of the state association; and Mr. R. R. Rosell, assistant to the secretary. Dr. William W. Will, Bertha, president of the state medical association, will preside at the noon luncheon and the afternoon sessions, and Dr. Meyerding will preside at the breakfast and morning sessions.

### MISSISSIPPI

**Regional Conferences**—A series of regional conferences for public health workers was held during December at the following centers: Aberdeen, December 2; Greenwood, December 6; Hattiesburg, December 10; Jackson, December 12. Speakers were Drs. Horton Casparis, professor of pediatrics, Vanderbilt University School of Medicine, Nashville; John A. Milne, Jackson, supervisor of field unit, state board of health; and Archie L. Gray, Jackson, of the epidemiologic unit.

### MISSOURI

**Dr. Allen Lectures**—Edgar Allen, Ph.D., professor of anatomy, Yale University School of Medicine, New Haven, gave the third annual Harry Hayward Charlton Memorial Lecture in Anatomy at the University of Missouri, January 6, on "The Escape of the Egg from the Ovary."

**Society News**—The St. Louis Medical Society was addressed, January 21, by Dr. Thomas B. Pote on "Incidence of Trichina Spiralis" and Michael Somogyi, Ph.D., and Dr. Jerome E. Cook, "Practical and Theoretical Considerations in the Treatment of Diabetes."—The monthly clinic of the Kansas City Southwest Clinical Society, February 11, will be a symposium on pneumonia, presented by members of the society, the guest speaker will be Dr. Wheelan D. Suthif, Chicago, who will give an outline of the serum treatment of pneumonia.—At a meeting of the Kansas City Pathological

Society, January 21, speakers were Drs Ferdinand C Helwig on "Sarcoma of the Spleen" and Eugene R. Kellersberger, Bibanga, Belgian Congo, Africa, "Tropical Diseases in the Congo"

### NEW JERSEY

**Personal.**—Dr Ellsworth E. Conover, Hasbrouck Heights, was guest of honor at a banquet given by the Bergen County Medical Society in Hackensack, November 22, in observance of his fiftieth anniversary in the practice of medicine. — Dr William S. Collens, Brooklyn, has been appointed director of metabolic diseases at Aurora Health Institute at Morristown

### NEW YORK

**Society News.**—Speakers before the Medical Society of the County of Albany, January 29 were Drs Charles Gordon Heyd and Frederic E. Sondern, New York, on "Malpractice Defense and Indemnity Insurance," and Walter A. Reynolds, "Hypertension in Children and Young Adults"

**Graduate Course on Cancer.**—The Medical Society of the County of Erie began a graduate course on cancer in Buffalo February 2, which will continue on Sunday afternoons through April 5. Speakers announced are members of the staff of the State Institute for Study of Malignant Disease, as follows: Drs Burton T. Simpson, Louis C. Kress, Charles C. Herger, Alphonse A. Thibaudau, Ernest M. Watson, Walter L. Matlick, William H. Wehr, Walter T. Murphy and Joseph P. O'Brien, Eugene M. Burke and Melvin C. Reinhard, M.A.

**Bills Introduced.**—S 503 proposes a system of compulsory and voluntary sickness insurance the benefits of which are to consist of cash and all forms of medical and dental service. Persons employed at "other than manual labor" and receiving wages in excess of \$60 a week, farm laborers and persons employed by an employer having less than three employees in personal and domestic service are to be excluded from the compulsory insurance of the bill but are to be entitled to participate in the voluntary insurance. This bill appears to be the so-called Epstein Health Insurance Bill proposed by the American Association for Social Security, Inc. A 623 proposes that, as a condition precedent to the obtaining of a license to wed, both parties to a prospective marriage be required to present to the official authorized to issue such licenses a statement, signed by a licensed physician, that neither party is "infected with syphilis or in a state of that disease that may become communicable." The physician's statement must be accompanied by a record of a standard laboratory blood test made not more than forty days before the issuance of the marriage license. S 586 proposes to authorize New York City to establish and maintain a public clinic or hospital within the area bounded by Eighth and Lexington avenues and One Hundredth and One Hundred and Twenty-Fifth streets, for the prevention and treatment of tropical and contagious diseases. The medical and nursing staffs of the proposed clinic or hospital must be composed of at least 50 per cent of doctors and nurses of the same racial origin as the majority of the inhabitants of such area. A 550 proposes that no employee of any hospital be required or permitted to work more than eight hours in any day or more than forty-eight hours in any calendar week. Each employee is to be entitled to receive twenty four consecutive hours of rest in any calendar week.

### New York City

**The Sir Robert Jones Lecture.**—Dr Frederick J. Gaenslen, Milwaukee, gave the sixth Sir Robert Jones Lecture at the Hospital for Joint Diseases, February 6, on "Fractures of the Neck of the Femur"

**Hospital News.**—A psychiatric clinic for children has recently been organized at the Babies' Hospital in cooperation with the College of Physicians and Surgeons of Columbia University under a grant from the Commonwealth Fund. Dr William S. Langford is in charge. — Dr Thomas A. Martin has resigned as medical director of Harlem Hospital to become medical director of St. Vincent's Hospital. Dr Oswald N. LaRotonda succeeded Dr Martin at Harlem.

**Society News.**—Drs Daniel F. Jones, Boston, and Carl Eggers addressed a stated meeting of the New York Academy of Medicine, February 6, on "The More Recent Advances in the Treatment of Carcinoma of the Sigmoid and Rectum" and "Diverticulitis of the Colon," respectively. — A program on heart disease will be presented at a meeting of the Medical Society of the County of Queens February 25 with the following speakers: Drs Charles C. Wolfert, Philadelphia on "Present Status of Electrocardiography in the Study of Coronary Arteriosclerosis and Its Complications," Irving R. Roth, "Prognosis of Various Types of Heart Disease," and Daniel Porte, "Newer Methods of Treatment of Heart Disease."

### OHIO

**Scholarship Open at Ohio State University.**—Announcement is made of the Elizabeth Clay Howald Scholarship of \$3,000 for study at Ohio State University, Columbus. Any person who has in progress work that promises to yield important contributions to knowledge is eligible for the scholarship. If the appointee has ever been a student at Ohio State University or a member of its staff he may carry on his investigations either at the university or in another place where superior advantages for his field are available. If he has had no connection with the university, he must do his work there. Applications must be filed with the dean of the graduate school not later than March 1. Blanks may be obtained from the dean. The appointment will be made April 1 and the term of appointment will begin July 1. The honorarium will be paid in twelve monthly instalments.

### PENNSYLVANIA

**New Members of State Board.**—Governor Earle has recently announced the following changes in the State Board of Medical Education and Licensure: Dr William Cullen Bryant, Pittsburgh, to succeed Dr Harry W. Albertson, Scranton; Dr George W. Hartman, Harrisburg, to succeed the late Dr Clarence Bartlett, Philadelphia; and Dr Domer S. Newill, Connelville, to succeed Dr Charles J. Hemminger, Somerset.

### Philadelphia

**The Annual Thomas Oration.**—Dr Clyde Leroy Deming, clinical professor of urology, Yale University School of Medicine, New Haven, Conn., delivered the B. A. Thomas Annual Oration of the Philadelphia Urological Society, January 27, on "The Gonadotropic Factor as an Aid to the Surgical Treatment of Undescended Testicle."

**Public Lectures by Dr Novak.**—A series of three lectures by Dr Emil Novak, associate professor of obstetrics, University of Maryland School of Medicine, Baltimore, in a medical forum open to the public was begun January 31. The general subject is "The Woman Asks the Doctor." Future lectures will be March 13 and April 13, in the auditorium of the Philadelphia County Medical Society.

**University News.**—Temple University recently celebrated the tenth anniversary of the presidency of Charles E. Beury, LL.D. Developments during the decade included the building of a new home for the school of medicine in 1929. In the ten years the number of beds of Temple University Hospital have increased from 266 to 462, house patients from 4,974 to 9,360, dispensary patients from 33,536 to 116,344, operations from 2,511 to 6,729 and annual free service from \$71,250.10 to \$358,221.45. At a dinner, January 18, Dr Wilmer Krusen, honorary vice president of the university, presided; addresses were made by Dr Beury, William Mather Lewis, Litt.D., president of Lafayette College, Easton, and Mrs. Curtis Bok.

### Pittsburgh

**Society News.**—Dr Howard G. Schleiter, among others, addressed the Pittsburgh Academy of Medicine, January 14, on "Cardiac Complaints and Lesions Following Nonpenetrating Wounds of the Chest." — Dr David L. Simon addressed the Pittsburgh Urological Association, January 20, on "Anomalies of the Kidney." — At the annual dinner of the Pittsburgh Medical Forum, January 20, the guest speaker was Dr Aaron S. Blumgarten, New York, on "New Concepts in Endocrine Diagnosis and Treatment."

**Hospital News.**—Dr Harold W. Jacob, assistant professor of roentgenology, University of Michigan Medical School, Ann Arbor, has been appointed director of roentgen and radium therapy at the Western Pennsylvania Hospital to succeed the late Dr Heinz Langer. Dr Jacob was graduated from the University of Michigan in 1928. — Montefiore Hospital opened special rooms for oxygen therapy and air-conditioned rooms for treatment of hay fever, asthma and dermatologic conditions. — January 20, Dr Alvan L. Barach, New York, made an address on "Development of the Use of the Gases of the Air in the Treatment of Cardiorespiratory Disease," and J. I. Banash, consulting engineer, Chicago, on "The Doctor, Oxygen and the Engineer."

### RHODE ISLAND

**Bill Introduced.**—H 597 proposes a system of compulsory and voluntary sickness insurance the benefits of which are to consist of cash and all forms of medical and dental service. Persons employed at "other than manual labor" and receiving wages in excess of \$60 a week, farm laborers and persons employed by an employer having less than three employees in

personal and domestic service are to be excluded from the compulsory insurance of the bill but are to be entitled to participate in the voluntary insurance. This bill appears to be the so-called Epstein Health Insurance Bill, proposed by the American Association for Social Security, Inc

### SOUTH CAROLINA

**Bill Introduced**—H 940 proposes to create the Cherokee County Hospital Board, which is to be authorized to purchase the existing city hospital at Gaffney or to construct and equip a hospital in Cherokee county suitable to the needs of the county. This board is to have charge and control of the maintenance of the hospital thus purchased or constructed.

**Society News**—Dr James W Jervy Jr, Greenville, addressed the Oconee County Medical Society at Seneca in December on infections of the upper respiratory tract.—Drs Edward W Barron and Thomas D Dotterer, Columbia, discussed care of the new-born and infant feeding, respectively at a meeting of the Edisto Medical Society in December.

### VIRGINIA

**Bills Introduced**—S 119 proposes to require the annual licensing by the Board of Pharmacy of persons engaged in the manufacture or preparation of drugs, medicines, toilet articles, dentifrices or cosmetics and to require such manufacturing and preparation to be under the supervision of a registered pharmacist or some other person approved by the Board of Pharmacy. S 121 proposes to make it unlawful to distribute any drug, medicine or pharmaceutical or medicinal preparation by means of so-called "medicine shows" or patent medicine shows. H 163, to amend the dental practice act, proposes to prohibit any person who has appealed to the courts from an order of the Board of Dental Examiners revoking or suspending his license to practice dentistry from practicing dentistry until such time as the court reverses the order of the board.

### WASHINGTON

**Surgical Meeting**—Dr Owen H Wangenstein, Minneapolis, was the principal speaker at a session of the Spokane Surgical Society at the Davenport Hotel February 8 in Spokane. He discussed "Diagnostic and Therapeutic Considerations in the Management of Acute Abdominal Disorders" and "Practical Considerations in the Management of Acute and Chronic Empyema." He also conducted a clinic. In addition to papers presented by members of the society a round table luncheon was held at which the theme was "Practical Aspects of the Therapeutic Problem in Bowel Obstruction."

### GENERAL

**Conference on Psychiatric Education**—The division of psychiatric education of the National Committee for Mental Hygiene is sponsoring a conference at the Henry Phipps Psychiatric Clinic, Baltimore April 8-10, on the content and methods of instruction in psychiatry. Dr Adolf Meyer, Baltimore, will be in charge of the conference, to which all physicians engaged in the teaching of psychiatry are invited. Clinics and demonstrations will be a part of the program.

**Society of Pathologists**—The Pacific Northwest Society of Pathologists was recently organized with Drs Frank R Menne, Portland, Ore., as president, Delbert H Nickson, Seattle, vice president, and Thomas D Robertson, Portland, Ore., secretary. Membership is confined to physicians limiting their activities principally to pathology and the allied sciences. Members must have qualifications equal to those required by the American Society of Clinical Pathologists and the American Society of Pathologists and Bacteriologists.

**Changes in Status of Licensure**—The Virginia State Board of Medical Examiners reported the following action:

Dr Boyd E P Dickerson, formerly of Abingdon, license revoked at the December 1935 meeting because of his conviction on a charge of violating the Harrison Narcotic Act.

The Massachusetts State Department of Registration announces the following:

Dr Joseph N Tessier, New Bedford, license restored December 18.  
Dr Sarah Margaret Brown, Boston, license restored December 12.

The Public Health Council of West Virginia reports the following action taken Oct 29, 1935:

License of Dr Chester Arthur Hutchinson, formerly of Appalachia, Va., revoked after he had been found guilty of murder in the first degree.

The following action has been reported by the Kansas State Board of Registration:

Dr Guy E. Brewer Garber, Okla., license revoked Dec 10 1935 for conviction of a felony.

Dr John B Armstrong, Topeka, license restored December 10.

**Plotz Foundation Grants**—During 1935, the twelfth year of the Ella Sachs Plotz Foundation for the Advancement of Scientific Investigation, twenty-five grants were made to finance research on problems in medicine and surgery or in branches of science bearing on medicine and surgery, one being a continued annual grant. Twelve went to investigators outside the United States. In the twelve years of its existence the foundation has made 252 grants to workers in twenty-six countries. Applications for grants for the year 1936-1937 must be in the hands of the executive committee before May 1. There are no formal application blanks, but letters asking for aid must state definitely the qualifications of the investigator, the nature of the proposed research, the size of the grant requested and the specific use of the money to be expended. It is desirable to include letters of recommendation from the directors of laboratories or clinics in which the work is to be done. Applications should be sent to Dr Joseph C Aub, Collis P Huntington Memorial Hospital, 695 Huntington Avenue, Boston.

**Foundation to Study Air Hygiene**—The Air Hygiene Foundation of America, Inc., has been formed by a group of industries to conduct investigations and stimulate research in the field of air hygiene, to gather and disseminate facts relating thereto and to assist other agencies in the same activities. It will also cooperate in the coordination of such research efforts. Mr Harry B Meller, head of the air pollution investigation at Mellon Institute of Industrial Research, Pittsburgh, has been appointed managing director of the foundation, with headquarters in Pittsburgh. Mr Meller is a former dean of the University of Pittsburgh School of Mines. Frank F Rupert, Ph D, industrial fellow in physical chemistry at Mellon Institute, will assist him. For the medical phases of research to be conducted by the foundation Dr Samuel R Haythorn, professor of preventive medicine, University of Pittsburgh, has been appointed medical adviser. A comprehensive investigation has been begun at Mellon Institute with the support of the new foundation, of the hygienic technologic and economic aspects of air contamination especially by dusts in the industries.

**Medical Bills in Congress**—**Bills Introduced** S 3834 introduced by Senator Van Nuys, Indiana, proposes to make it unlawful to sell certain spirits containing alcohol produced from materials other than cereal grains. H R 10586, introduced by Representative Doughton, North Carolina, proposes to abolish the Bureau of Narcotics and to transfer the duties heretofore imposed on that bureau to the Secret Service Division of the Treasury Department. H R 10711, introduced by Representative Green, Florida, proposes to authorize an appropriation of \$1,000,000 to construct a marine hospital at Jacksonville, Fla. H R 10721, introduced (by request) by Representative McCormack, Massachusetts, proposes to grant pensions to men engaged in or connected with the military service of the United States or state troops during the period of Indian wars and disturbances and to the widows of such men. H R 10769, introduced by Representative Starnes, Alabama, proposes to provide that the rating as to the degree of disability of any veteran, to whom pension or compensation for disability has been or is hereafter awarded under the laws authorizing pensions or compensation to veterans of the World War shall not be reduced, except under certain conditions. H R 10771, introduced by Representative Utterback, Iowa, proposes to grant pensions and increase of pensions to widows of certain sailors, soldiers and marines of the Civil War.

**Society News**—Chauncey D Leake, Ph.D., professor of pharmacology, University of California School of Medicine, San Francisco, was elected president of the History of Science Society at its annual meeting in St. Louis in January. It is reported—The North Pacific Surgical Association held its annual meeting in Portland, Ore., December 6-7, with Dr Fredrick A Collier, Ann Arbor, Mich., as guest speaker. Dr Collier discussed "Dehydration and Water Balance in the Surgical Patient," "Fascial Planes in Relation to Infection" and "Ambrose Pare: The Man Who Brought Respectability to Surgery."—The American Academy of Ophthalmology and Otolaryngology will hold its annual meeting September 26 to October 3 at the Waldorf Astoria in New York.—Dr Melvin S Henderson, Rochester, Minn., was installed as president of the American Academy of Orthopedic Surgeons at the annual meeting in St. Louis, January 13-16. Dr Arthur Bruce Gill, Philadelphia, was chosen president-elect, Dr William B Carroll, Dallas, Texas, vice president, Dr Eugene Bishop, Mumfords, Indianapolis, treasurer, and Dr Philip Lewin, Chicago, secretary. The next annual session will be held in Cleveland Jan 11-13 1937. San Francisco is being considered for the place of meeting. The gold medal of the academy was awarded to Dr Henry H Kessler, Newark, N J, for his exhibit on

"Cineplastic Amputation"—Mr Ernest J Swift, secretary-general of the League of Red Cross Societies, with headquarters in Paris, has been recalled to the United States to succeed the late Col Ernest P Bicknell as vice chairman in charge of insular and foreign operations of the American Red Cross

## FOREIGN

**Retirement of Professor Ghon.**—Dr Anton Ghon, chief of the institute of pathologic anatomy in the German University of Prague, Czechoslovakia, since 1910, retired recently at the age of 70 Professor Ghon has published during his career more than 150 scientific papers as well as books and monographs

**Conference on Laws of Warfare.**—A conference of military physicians and lawyers specializing in the study of international law will be held at Monaco, February 10-12, in cooperation with the International Red Cross Committee to consider problems of the laws of warfare Information may be obtained from Dr J Voncken, Conference on Medicolegal Studies (Session d'Etudes Medico-juridiques), Quai de la Plaisance, Monaco

**Mental Hygiene Congress Postponed.**—The second International Congress on Mental Hygiene will be held in Paris in July 1937 instead of in the present year, as previously planned the executive committee announces For further information write to Clifford W Beers, general secretary of the International Committee for Mental Hygiene, 50 West Fiftieth Street, New York, or to Dr Edouard Toulouse president of the congress, 1 rue Cabana, Paris

## Deaths in Other Countries

Dr William Blair-Bell, emeritus professor of obstetrics and gynecology at the University of Liverpool died, January 26 at West Felton in Shropshire, aged 65

## Government Services

### General Delaney Retires

The retirement on his own application of Brig Gen Matthew A. Delaney, assistant to the surgeon general U S Army, November 30 has been announced He is 61 General Delaney graduated from the University of Pennsylvania School of Medicine in 1898 In 1928 he received a certificate of public health from Harvard University School of Medicine General Delaney has been with the medical department of the U S Army since 1901 He served in the Philippine Insurrection and was White House physician during President Taft's administration from 1909 to 1913 During the World War he was in charge of base hospital number 10 and was later detailed as liaison officer with the British War Office He was formerly assistant executive in the surgeon general's office He received the Distinguished Service Medal in recognition of efficient operation of his unit in France and was decorated by the British government

### Annual Report of Public Health Service

The mortality rate for the calendar year 1934 in states reporting to the U S Public Health Service was 10.9 per thousand of population, according to the annual report of the surgeon general for the fiscal year ended June 1935 This is slightly higher than the rate for 1933 for the same states (10.5) but lower than any recorded rate earlier than 1932 when the rate was 10.8 The birth rate for 1934 was 17.1 per thousand of population as compared with 16.6 in 1933 representing 93,975 more births in 1934 than in 1933 The increase of 3 per cent is noteworthy because the birth rate has been decreasing for several decades In 1934 the infant death rate was 59.9 per thousand live births as compared with 58.2 in 1933 However, the 1934 rate was lower than for any year earlier than 1932 The rate of 56.2 per hundred thousand of population for tuberculosis was the lowest for this disease ever recorded by the service A mortality rate of 3.3 per hundred thousand of population was recorded for both typhoid and diphtheria A new low rate was reported for smallpox 5.371 cases with no cases being reported in Maine Vermont Massachusetts Rhode Island Connecticut New York New Jersey Pennsylvania Delaware Maryland or the District of Columbia Neither cholera nor yellow fever appeared in the United States although about 1,000 cases of cholera were reported in the Philippine Islands Since 1928 the death rate from pellagra has been decreasing until in 1934 a rate of 3.2 per hundred

thousand was indicated for forty-five states An unusual occurrence of dengue fever was reported with 2,005 cases in Florida 1962 in Georgia and 1,072 in Alabama The report points out that the actual number of cases was much higher, as many are not recorded A fatal case of bubonic plague was reported in Lake County, Ore., in May 1934 and a case in Tulare County, Calif., 197 plague infected ground squirrels and one plague-infected rat were found in California during the year There were 254,551 cases of syphilis and 161,810 cases of gonorrhea reported by state health departments Special surveys to determine the true prevalence of these diseases revealed that there are about 518,000 new cases of syphilis in the United States each year and 1,555,000 of gonorrhea There was a widespread outbreak of poliomelitis in North Carolina and Virginia the first in the South

Of 730,777 alien passengers and 696,562 seamen examined at various ports, 14,569 and 1,250 respectively were certified as being afflicted with some mental or physical defect or disease There were 35,978 applicants for immigration visas examined There were 15,262 vessels and 1,924,556 persons inspected at continental and insular ports and 168 vessels and 45,939 persons at foreign ports Of 4,081 arriving airplanes carrying 34,135 persons, 2,636 planes with 30,249 persons were inspected The remaining planes arrived at ports at which no medical officer of the service was available During the year 1,147 vessels were fumigated at United States ports because of disease on board or for the destruction of rats Because of the high mortality rate from malaria imported into the United States from Mexican territory officers of the service at Texas Mexican border stations were directed, in cooperation with the state health officer of Texas, to make a microscopic examination of the blood of any arriving person suspected of malaria and to notify the Texas State Department of Health of the name and destination of every person with malaria released for entry into the United States Persons found to be infected were certified to the proper authorities for consideration of exclusion until cured

To cooperative federal aid is attributed the increase in full time health units from 530 in 1933 to 540 in 1934 The service continued trachoma eradication activities in Kentucky, Missouri and Tennessee in cooperation with state authorities Of 1,750 vessels engaged in interstate traffic, 51.4 per cent were reinspected and certified as complying with the regulations governing drinking and culinary water systems Assistance was given to states on stream pollution programs

Hospital and outpatient care was furnished to American seamen and other beneficiaries at 154 ports, 332,034 accredited persons applied for treatment and other medical service In this work, 1,801,768 hospital days and 1,150,981 outpatient treatments were furnished to legal beneficiaries at a per diem cost of \$3.31

A total of 284.4 liters of Rocky Mountain spotted fever vaccine was produced during the fiscal year 1935, 36.6 liters more than in 1934 About one fifth of the supply was furnished to the Civilian Conservation Corps in the infected areas Cases of the disease were reported for the first time in Illinois and Oklahoma and new endemic areas were reported in Montana Idaho and California it is now present in thirty-four states Studies of the relation of sickness to the depression were continued and great differences in sickness rates were found between persons on relief and those not on relief Further success is reported in the use of formaldehyde sulfoxylate as an antidote for mercury bichloride poisoning

The International Sanitary Convention for Aerial Navigation was ratified by the United States June 13 1935 and became effective November 22 The first federal narcotic farm was opened at Lexington Ky., May 29 1935, with a bed capacity of 1,000 A similar institution will be opened at Fort Worth Texas More than 1,500,000 dental examinations of children in twenty-six states were compiled classified according to color, sex, age and size of area in which the children live

The report recommends among other things enlargement of the commissioned personnel of the public health service erection of new hospitals at Miami Fla Portland Me., and Los Angeles and the completion of the marine hospital at Stapleton N. Y., to provide for a total of 1,200 beds Additional quarters for commissioned and other personnel are required in Baltimore Norfolk Fort Stanton Seattle and Savannah, and recreational buildings at New Orleans, Carville and Fort Stanton

A fund of \$10,687,883 was available for the activities of the service during the year of this amount \$10,584,496 was expended



## Foreign Letters

### LONDON

(From Our Regular Correspondent)

Jan 4, 1936

#### The Tragedy of Hugh Owen Thomas

In the months before his death in 1933, Sir Robert Jones discussed with his son-in-law, Mr Frederick Watson, the publication of a centenary volume on the life and principles of his uncle and master, Hugh Owen Thomas. In place of the book that Jones was prevented by death from writing, two volumes have appeared. One, a personal study of Thomas by Watson was reviewed in *THE JOURNAL*, March 23 1935, p 1018. The other, "Hugh Owen Thomas: His Principles and Practice," by Mr D McCrae Aitken an orthopedic surgeon who was for thirty years associated with Sir Robert Jones, recently appeared. These two books are an interesting experiment in biography, the story of Thomas's personal life and ancestry being told by Watson, a literary man with experience in biography, while his technical work is independently described by a surgeon, whose long association with Jones renders him especially fitted for the task. Mr Aitken's book and the short articles to which it has given rise in medical journals bring the centenary publications to a close. Indeed, but for the centenary lecture by McMurray, published in the *Liverpool Medical-Chirurgical Journal* (*THE JOURNAL*, June 22, 1935, p 2275) no further notice has been given to the man who, in the words of John Ridlon, 'did more for orthopedics than all the rest since Hippocrates'.

The fundamental principle of Thomas's treatment of diseased joints was 'enforced uninterrupted and prolonged rest' which he carried out by his inimitable splints. The surgeons of his day did not understand rest, to which he gave a meaning extending far beyond that of Hilton. They performed amputations and excisions of tuberculous joints, which he showed to be unnecessary. His methods of diagnosis as well as of treatment have become the basis of modern orthopedics. Yet from his writings, all of which have stood the test of time many valuable details that are far from generally known may still be gleaned. These are well summarized by Mr Aitken. Thomas pointed out that the earliest sign of joint disease is defect of normal movement. The earliest sign of hip disease in a child might be a slight limp not necessarily any definite complaint of pain or effusion of fluid into the joint. If testing by gentle passive movement beyond the range voluntarily performed produced muscular spasm, the diagnosis was complete. The spasm was nature's attempt at rest, which could be better given by a splint the efficiency of which was shown by disappearance of all spasm. If this did not occur, the splint was not efficient or not properly applied, or the patient undid the bandage, allowing movement. The fixation of the limb must not impede free circulation in the joint. This was accomplished by his own splints. He disliked plaster of paris, for he thought that it impeded the circulation. Continuous tension he also objected to because it hindered the circulation. For this reason he aspirated distended joints. When acute symptoms subsided he had his patients with hip, knee and ankle disease get up. They had a patten on the sound limb to keep the diseased one off the ground. As long as control of the affected joint was maintained he considered exercise an advantage. He held that prolonged fixation never produced permanent stiffness in healthy joints and that the best chance of recovery with movement was given by complete rest from the beginning. On the other hand, any movement of the inflamed joint would tend to produce ankylosis. Mr Aitken says that unfortunately this rule has not yet been

accepted by those who treat the various types of rheumatic arthritis. Thomas throughout his writings warns against breaking down contracted joints by forcible manipulation. He wrote "Joints that have perfectly recovered either from injury or disease regain motion earliest by being employed in the ordinary manner. Joints not in a healthy condition automatically resent attempts at compulsory use. Passive movements applied to injured or diseased joints delay recovery and, if applied to cured joints, delay complete restoration of function. Discussing adhesions following injuries, he says 'Manipulating joints that are stiff from any abnormal condition of their muscles is wrong. When it has relieved stiff joints, some risk has been run and the gain has been only time'.

Mr Aitken quotes extensively from the First Thomas Memorial Lecture delivered at Liverpool by Sir Robert Jones in 1922, a document of the first importance which for some reason has been published only in abstract. It is Jones who has transmitted Thomas to future generations. This lecture further reveals the discreditable treatment of Thomas by his contemporaries. Jones said 'When I look back on those early years, when he preached as one in the wilderness, when only one surgeon, in this city, of scholastic attainment and vision realized the importance of his work, it is little less than a romance that thirty years after his death, when all but great reputations have perished we are assembled to inaugurate triennial lectures to his memory. Few academic honors came to him, one from Spain, another from America. He always felt, however, in the midst of opposition, that he was formulating sound surgical principles of vital import.

Parker's friendship and encouragement at a time when help was badly needed meant a good deal. He ran considerable risk in regard to his future prospects by so closely associating with Thomas. An interesting story might be written of the petty tyranny and persecution to which Thomas at that time was subjected by certain of his distinguished Liverpool contemporaries.' It may be added that Jones, the nephew, pupil and successor to Thomas, seems to have succeeded to some of the prejudice against his master, Thomas. This is shown by the long time that elapsed before his position was acknowledged in this country and by opposition to his appointment as head of the orthopedic service of the army in the great war. Yet he was 'no fighter,' as Thomas lamented to Ridlon and therefore the excuse given in the medical press that Thomas's treatment was due to his pugnacity does not hold. Other great pioneers who were not in the least pugnacious such as Lister, encountered the same opposition from smaller men in high places. Jones, unlike Thomas, had no vitriolic pen for his enemies. He simply taught Thomas's principles and made them acceptable to the surgical world. This was his greatest achievement, as Ridlon says. In Aitken's phrase, he succeeded by peaceful penetration where Thomas failed by frontal attack. But it is tragic that Thomas should have died only hoping that some day his principles would triumph. An important journal tells us that he "is rapidly coming into his proper place among the leaders of medicine." This after he has been dead over forty years and after Jones spent a lifetime in teaching his principles! Truly we are conservative and in no hurry to recognize our great men. The one shining exception to the neglect and opposition which Thomas encountered was furnished by Mr Rushton Parker, a young surgeon, just returned to Liverpool from University College Hospital where he was a favorite pupil of Erichsen. He afterward became professor of surgery at Liverpool and gave Thomas his powerful support, as mentioned by Jones. It was he who persuaded Thomas to publish the book which brought Ridlon to Thomas and so led to his work being known in America for no one has paid tribute to Thomas with such eloquence as Ridlon.

## PARIS

(From Our Regular Correspondent)

Dec. 27, 1935

## Vaccination Against Yellow Fever

Fear has been manifested with regard to the possible danger for the population, in countries where yellow fever is endemic, of amaril vaccination. It has been alleged that the virus, even though altered by passage in the brain of mice, can be present in the blood, during the process of immunization, and be taken up by mosquitoes and finally inoculated into some nonimmune man or monkey. Davis, Lloyd and Frobisher point out that the so-called neurotropic virus, adapted to the mouse can only with difficulty be transmitted to *Macacus rhesus*. But one must not forget that *Macacus rhesus* is highly receptive to amaril virus, much more so than man. It is theoretically possible to immunize the fixed population of towns against yellow fever but much more difficult to protect the traveling public, and the danger is much greater since the better communications today make a melting pot of the formerly segregated tribes of West Africa. The virus reservoir is now to be found not only in the Sine Saloum country but also in the whole of the West Africa federation, including perhaps the wild beasts. Drs Mathis, Durieux and Advier recently reported to the Academie de medecine their experiments on the possibility of infecting normal individuals by mosquitoes which have fed on people immunized by the Sellards-Laignret technic. Dr Mathis and his co-workers, after trials on monkeys, experimented on man. The individuals who submitted to the bites of numerous mosquitoes that had fed on men in process of vaccination by the Sellards Laignret method remained uninfected. Further evidence of the harmlessness of inoculations with the Sellards-Laignret method is that thousands of people, white and colored, were inoculated and no cases were ever mentioned of yellow fever in any of them.

## The Dispensaries and Tuberculosis Mortality

The city of Lyons, the third largest of France, numbers almost 600,000 inhabitants. A systematic struggle against tuberculosis was begun in Lyons thirty years ago by the creation of the Jules Courmont Dispensary. Lyons now has nine similar dispensaries, which in 1934 treated 16,000 patients sent to the preventorium, 1,378 children, and kept under observation 8,000 families and 22,000 persons who had been in contact with tuberculous persons. Careful statistics, presented by Dr Paul Courmont to the Academie de medecine, show that during the last thirty years the mortality from tuberculosis has diminished more than that of the mortality in general. This decrease has been especially important in populous districts having a high death rate, and the betterment of the mortality rate has increased in proportion to the successive foundations of dispensaries in various districts before unprovided with them. In the one district without a dispensary the mortality remained high, decreasing only 28 per cent in thirty years in comparison with 55 per cent in the rest of the city. Dr Courmont's statistics include the mortality from all forms of tuberculosis and not only pulmonary tuberculosis.

## The Etiology of Cerebral Hemorrhage

The old theory of anatomic alterations of the cerebral arteries cleared the way to the vasomotor theory according to which spasm of the arteries is responsible for breaking the walls or for capillary hemorrhage or for diapedesis of the red cells. But that concept is in opposition to the view that the cerebral arteries are not affected by violent vasomotor changes and enjoy a certain amount of independence. Drs E. Frommel and A. D. Herschberg of Geneva explain in the *Journal de physiologie et de pathologie generale* that such vasomotor reactions are not caused by variations in the autonomic nervous

system of the cerebral arteries but by a chemical regulation due to the cellular metabolism. In our almost absolute ignorance of the metabolism of the nerve cell, we can enumerate only a few substances which chemically regulate the vessels and especially the cerebral arteries. Besides such hormones as epinephrine and thyroxine there are many products of cellular metabolism to which the cerebral vessels are sensitive, such as choline, histamine and histidine, derivatives of nucleic acid, present in every tissue, of which the most important representative is adenosine phosphoric acid. One must mention near the products of the cellular metabolism the power of the organism to fix oxygen in the tissues and carbon dioxide, acidosis leading to vasoconstriction and alkalosis to vasodilatation. These effects of cellular metabolism are not simple retention of certain products more or less toxic but a matter of permitting certain substances, inadequately metabolized, to remain in the organism and influence the nervous system. The anatomic state of the cerebral arteries certainly plays a part in cerebral hemorrhage, but it is only one of the conditions present. The experiments of Drs Frommel and Herschberg on the action of certain substance injected directly into the brain of guinea-pigs seems partly to confirm their chemical theory.

## BERLIN

(From Our Regular Correspondent)

Dec. 16, 1935

## How Do Amputations Affect Human Beings?

Dr Ruth Wilmanns of Basel recently reported in the *Allgemeine Wochenschrift* follow up studies of the physical and mental condition of 309 patients who had had an arm or a leg amputated within the last twenty years. The operation had been made necessary by injury in 101 of these cases, by disease in 196 cases and by deformed and crippled conditions in twelve cases. Tuberculosis was the cause in 36 per cent of the cases, arteriosclerotic gangrene and diabetic gangrene in 17 per cent, and malignant tumors in 11 per cent. In ninety-five cases the subsequent condition of the patient could be determined with exactitude. In critical examinations of this sort the individual predispositions of each patient had to be considered. With this in mind the following conclusions may be set forth. The handicap of a congenitally defective or absent limb is in man surprisingly easy to overcome, a fact already well known in institutions for the crippled. When a limb is lost by amputation during youth, the handicap can be sufficiently mastered. Moreover, traumatic neuroses and personal injury neuroses are scarcely ever found in young persons. Amputation taking place during the period of involution or senility, when the patient no longer possesses the agility of youth produces quite different results. The psychic condition is different, optimism and vital energy together with a stern will to overcome the handicap are no longer present. In middle aged adults the reaction to the loss of a limb depends largely on idiosyncrasy. Intellectual predisposition of course plays a decisive part in such cases and external factors such as environment, early training and education are important. The occupational background enters into the picture. Noteworthy are the differing reactions produced by the type of indemnification received for the injury by the patient. When it takes the form of an income the recipient regards the indemnity as insufficient whereas settlement in a lump sum is seized on as a welcome prize. This lump sum settlement has no noticeable influence on the rehabilitation of the crippled person but the lifelong income often prevents him from striving with all his energy for the restoration of his working capacity.

The results of the follow up examinations were excellent throughout, only in five cases were supuration of the suture or decubital ulcers found. Twenty-eight of the patients complained of areas of pressure during the heat of summer and

also of abscesses such as result from excessive perspiration. The most common complaint among patients who had undergone Pirogoff's amputation was the constant coldness of the stump. In addition, the skin of the stump end frequently in such cases inclined to cornification. Quite frequently pain resulted in one-legged patients from the heavy burden of the single leg. In nearly all these a pes valgus was noted. The older patients complained of a slight feeling of fatigue in the leg and the majority complained of backache. From the loss of arm or leg, scoliosis in varying degrees had resulted. No connection was found, however, between the magnitude of the loss and the severity of the scoliosis. Of the ninety-five patients, sixty-one still suffer pain, chiefly induced by the state of the weather, often they complain of imaginary pains. Experiments with prostheses are wholly individual. Here as in all these questions personality as well as external circumstances plays a different part in each case. Systematic training (schools for the one armed, walking schools) is moreover of particular importance.

### Underwater Therapy for The Crippled

Balneologist Härtel of Kissingen recently read a paper before the Berlin Medical Society on the method employed at Warm Springs, Ga., and the good results obtained there. He also exhibited a film of the Warm Springs establishment in which were shown scenes of the systematic exercise in water therapy.

Following this, Dr. Scholtz, director of the hydrotherapeutic section of the Rudolph Virchow Hospital in Berlin, spoke on his experiments with lame persons. Movement in a crippled member is almost always first made possible by the removal of its weight in water, after the first movements, continued regulated bathing and training increase the strength of the limb and its power to control movement. The removal of the weight permits a concentration of power in the exercised member. The best results were produced in the treatment of spastic conditions. Special attention was also called to the psychic effect on the bather. In his section Dr. Scholtz has had success in numerous neurologic cases and also in the treatment of spastic and flabby conditions and in multiple sclerosis. Tabes, however, did not respond to the treatment. Scholtz presented a child who when the treatment began had been entirely crippled by poliomyelitis and who had recovered the normal use of the limbs. A boxer who had presented a center of hemorrhage in the upper spinal cord and who had been trained to walk again was also shown.

In closing the hydrotherapeutic section of the Charité exhibited in film the remarkable improvement accomplished by this therapy in an old arthritic joint with severe pathologic changes.

### "New German Medicine"

More and more frequent are reports concerning the movement that has as its objective the foundation of a so-called new German medicine. It is interesting in this connection to learn that in March 1936 a 'National Convention of the Reichs-Arbeitsgemeinschaft' (federal organization for a new German Medicine) will take place at Wiesbaden and that its final session will be held in conjunction with a meeting of the German Society of Internal Medicine. On this day the topic of internal treatment of thyrotoxicosis will be discussed. The principal reports to be submitted by the Berlin internist Professor Siebeck and the director of the aforementioned Reichs-Arbeitsgemeinschaft Professor Kötschau of Jena. Other reports will treat of the question from various standpoints such as the psychotherapeutic, the homeopathic and the naturopathic and finally one physician will deal with the question as a country doctor.

Not long ago the University of Jena held its first "Schulungslager" (training camp) for Biologic Medicine, to which the Society of German Students sent medical students as representatives from all the state universities of Germany. This schulungs-

lager serves the purpose of making biologic thought available to the future physicians. Participants in the "camp" had explained to them in a series of theoretical lectures the fundamentals of homeopathy and motor and water treatment as well as herb medicine, which the practical exercises also served to demonstrate.

### The Diagnostic Institutes

Just as some time ago the question of the designations appearing on office name plates of physicians was regulated, so now the scope of the diagnostic institutes has been defined. The Berlin Aerztekammer (Chamber of Physicians) together with the Kassenärztlichen Vereinigung Deutschlands (Union of Physician's Associations of Germany) has determined that it is necessary "in the interest of clarity and of a clearly defined separation of the various fields of medicine" that a physician devote himself either to medicodiagnostic activities or to private practice. He must no longer engage in the two at the same time. These institutes shall from now on undertake only examinations of patients referred to them by association member practitioners. An exception is made in the case of blood examinations for which practitioners may obtain a special license. Physicians holding such licenses should display on their name plates besides the inscription 'praktischer arzt' (general medical practitioner) or 'facharzt' (specialist) the additional words "officially licensed for serologic blood examinations." Those physicians continuing in practice receive compensation for such examinations only from patients coming to them in the course of private practice. All physicians who wish to engage in medicodiagnostic activity must decide between such activity and the actual practice of medicine.

### VIENNA

(From Our Regular Correspondent)

Dec. 18, 1935

### The Population of Vienna

In a study of the population of Vienna just published by Dr. Ernst Fürth in the *Oesterreichische Arzt* are data gleaned by comparing the census of Dec. 24, 1923, with that of March 22, 1934. This study clearly shows the fall of the birth rate and also of the death rate. For the ten years the deaths exceeded the births by 58,845. Consequently a decrease in the city's population would have set in had not immigration, chiefly of young persons, compensated for the deficit. The population was 1,865,780 in 1923 and 1,874,130 in 1934. The males numbered 860,119 in 1923 but only 846,422 by 1934. The corresponding figures for females show an increase from 1,005,661 in 1923 to 1,027,708 in 1934. Thus within ten years the number of males decreased by nearly 14,000, while the females showed an increase of more than 22,000. In Vienna particular improvement is to be noted in the age groups from 0 to 1 year and from 1 to 5 years whereas for all Austria the death rate in the first year of life amounted to 115.45 male and 92.40 female children for each thousand live births. The corresponding figures for Vienna show 72.76 for males and 61.73 for females. For women from 40 to 65, the death rate had fallen to two thirds of the rate for men in the same age group. Only in the age group from 15 to 20 is the mortality of the females almost the same as that of the males. In all the other age groups the female death rate is invariably lower. The mortality among legitimate children in Vienna has been in recent years exceeded by that of illegitimate children. In 1900 the mortality of legitimate children amounted to 195 for every thousand live births, that of illegitimate children 185, in 1910, 159 legitimate against 191 illegitimate, in 1923, 89 against 189 in 1934 57 against 103. This shows that until 1923 the death rate among illegitimate children remained approximately stationary while the rate for legitimate children decreased by 60 per cent. In the last decade the rates for the two categories

descend in almost equal measure. The death rate for the entire population decreased from 16.20 for every thousand inhabitants in 1923 to 12.20 in 1934. The rate for females was from 2 to 3 per cent less than that of the males (13.36 per cent for males, 10.95 for females in 1934). At the same time it was shown that tuberculosis, of all the causes of death, decreased most constantly (about 50 per cent in ten years). Although the rate for the higher groups decreased but little, a steadily smaller number of younger persons succumbed to this disease. Of all those dying of tuberculosis, 40 per cent had passed the age of 50. The tuberculosis mortality of females was about 50 per cent lower than that for males. Only past the age of 60 did the death rate among females exceed that of the males. Also as regards deaths from cancer the female sex is better

TABLE 1—*Age Groups in Vienna*

| Age of Inhabitants | Per Cent of Male Population | Per Cent of Female Population |
|--------------------|-----------------------------|-------------------------------|
| From 0 to 6        | 4.62                        | 3.72                          |
| From 6 to 14       | 10.52                       | 8.40                          |
| From 14 to 60      | 72.97                       | 73.57                         |
| Over 60            | 11.89                       | 14.31                         |
|                    | 100.00                      | 100.00                        |

off than formerly, since the earlier preponderant number of cancer deaths in women has steadily decreased. For the entire population the rate over a period of fifty years amounted to 1,000 males to 1,350 females. In the ten year period here studied, however (without regard to age), the rate was 1,000 males to 1,155 females. The greatest number of cancer deaths will occur in men between the ages of 60 and 70, in females after the age of 70. The same holds true for diseases of the circulatory system, of which women are victims much later in life than men. All these facts show that the health of the female sex has in general been vastly improved. Women have acquired and preserved a greater resistance to lethal influences up to the highest age groups. Changes within the separate age groups are even more marked than was the case ten years ago. There are many more old women than in former times and more in proportion to old men. Of all the cities of middle Europe Vienna still contains the largest number of women aged 60 or more. Table 1 illustrates the existing proportion of age groups in Vienna.

One cannot state on the basis of these statistics that the Viennese population is superannuated even though the younger groups may be numerically inferior, nor is the danger of a preponderance of the aged and a deterioration in the population through eventual lack of youthful inhabitants indicated. An optimistic outlook should be drawn from the results of this study.

### The Water Supply of Vienna

A short time ago the Vienna Health Bureau celebrated the twenty fifth anniversary of the opening of the second alpine spring aqueduct. A Festschrift published for the occasion contains data on the history of Vienna's water supply. Before 1836 Vienna's fresh water came from local sources and amounted to only 1,600 cubic meters (tons) daily. In that year a new source was utilized, which provided the city with an additional 10,000 tons daily. This was supposed to have been filtered yet in 1873 an analysis showed the water to contain "cotton fibers, bird feathers and woolen threads. In those times there were many fatal cases of typhus and cholera. The number of deaths from typhus fluctuated between 412 in 1864 and 1,554 in 1855. The average was 845 deaths annually, or 170 for each hundred thousand inhabitants. Between 1831 and 1873 more than 20,000 persons died of cholera in Vienna. The water brought in was not pure and the quantity was insufficient (20 liters a day for each inhabitant). In addition much

water was drawn from house wells, another source of disease. In 1873 the first alpine spring aqueduct was placed in service, providing pure water. Immediately the number of typhus fatalities decreased. From 1874 to 1883 the annual average was 251 as compared with the earlier 845. During that period 80 per cent of the houses in Vienna were connected with the new water supply. Since 1888 every building in Vienna has been supplied with pure water. The number of deaths from typhus has steadily decreased. In 1934 there were only twenty-one such fatalities. In 1918 there were 170. The average mortality from typhus for each hundred thousand inhabitants in the period 1891-1930 was four, or one-fortieth that of the period 1851-1870. Since 1873, cholera has entirely disappeared. In that year there were still 2,854 fatal cases recorded. Forty-seven imported cases were reported for the years 1892, 1893, 1910, 1914 and 1915. True smallpox is today practically unknown here. When the first aqueduct became insufficient, owing to the growth of the city, the second aqueduct was constructed in 1910 to bring Vienna water from a location 170 kilometers (100 miles) distant. The source of the water was located at 6,000 feet above sea level. The two aqueducts supply Vienna with about 380,000 tons daily, which means 200 liters for each inhabitant every twenty four hours although the average daily consumption is only 145 per capita. An abundant supply is thus assured. Vienna is known for the excellent quality of its water. The temperature of this water is 8 C. (46.4 F.) both summer and winter. It is moderately hard and absolutely free from noxious infusions. Every building in Vienna is connected with this water supply.

### The Care for Aged Physicians

For more than thirty years, the problem of care for aged physicians in Vienna and in the rest of Austria has been under discussion. In only one Austrian province (Upper Austria) a welfare association has existed for the last fourteen years as a private undertaking of the local medical group. It includes all Upper Austrian physicians and provides for their widows and their orphans but it is not established on the technical basis of a life insurance organization. Aside from this there exist for Austrian physicians only so-called burial clubs or sick benefit clubs and benevolent committees. Since 1933 there has been worked out for the first time, at least for Vienna, pos-

TABLE 2—*Periods When Physicians of Vienna Were Born*

| Period    | Men   | Women | Totals |
|-----------|-------|-------|--------|
| 1845-1850 | 4     | 0     | 4      |
| 1851-1860 | 59    | 1     | 60     |
| 1861-1870 | 487   | 1     | 488    |
| 1871-1880 | 639   | 14    | 653    |
| 1881-1890 | 617   | 76    | 693    |
| 1891-1900 | 1,188 | 287   | 1,475  |
| 1901-1910 | 903   | 212   | 1,115  |
| 1911      | 1     |       | 1      |
| Totals    | 3,898 | 591   | 4,489  |

sible for all Austria a serious plan for the establishment of old age pensions for physicians. The plan is based on exact statistics concerning the medical profession. Immediate opposition was encountered from those physicians both in Vienna and in the provinces who as employees of public corporations already enjoyed pensions and insurance benefits for themselves and for their survivors. The new plan operated on a life insurance basis would supersede all present pension systems in public institutions. Because of the physicians' own attitude it is now problematic whether this new system will ever be put into practice. In former times the more favorable financial situation would have better fostered such an organization. Dr. Sonnenfeld proposes that all physicians regularly attached to hospitals (that is to say about 60 per cent of the medical profession) should be taxed 10 per cent and with the funds so obtained a foundation would be set up which together with

small monthly contributions, would suffice to provide for all physicians and would grant to all who have reached the age of 65 an old age pension of some 250 shillings monthly. It also provides for the compulsory retirement of all physicians who have reached that age in order to give ampler opportunities to the younger members of the profession. Later, the age of retirement could be changed to 60. Dr. Sonnefeld further includes some interesting statistics on the age groups of physicians in Vienna as follows: In Vienna reside 4,489 registered physicians, 591 of whom are women. Of these physicians two men are 90, one 89, one 86, two 84 and thirty-nine from 83 to 76. There are eighteen men and one woman 75 years of age. The second oldest woman physician is 65 and fourteen women are between 64 and 55. The youngest physicians include one man of 24 and twenty-nine men and seven women of 25. Physicians who died in the years 1929 to 1934 inclusive numbered 361; thus the average for six years corresponds with tolerable exactitude to the mortality rate of the population as a whole.

### BUCHAREST

(From Our Regular Correspondent)

Nov. 8, 1935

#### The Gradation of Official Physicians

A new act distinguishes five groups of physicians in the public service, according to whether they are concerned with hygiene, healing, laboratory work, administration in cities or forensic medicine. Specialists in any branch of medicine must produce evidence of having studied their branch for at least four years after graduation. The law recognizes as specialists those who, before its proclamation, were university professors, lecturers, assistants, or senior hospital physicians. Private physicians will be recognized as specialists only if they can supply documentary evidence of having worked in their specialty for at least five years.

In the public service the following ranks are established: junior physician, titular physician, physician-in-chief, principal physician, inspector-general physician and consulting physician. As a rule, every one must begin his public career as a junior physician and must spend two years in this capacity. If by then he is unworthy of promotion he remains in the same rank for a further year and if he still does not deserve advancement he must leave the public service. In exceptional cases, a man may join the service as titular physician or physician-in-chief if he has served in a private hospital for two years and four years respectively and has especially good qualifications. Advancement is not certain in every case but takes place according to merit. One must, however, spend at least two years as junior and four years as titular physician. The rank of inspector-general is reserved for the most prominent physicians and appointment is subject to the recommendation of a special commission. Their total number cannot exceed thirty in the whole country. If an inspector-general has shown particularly useful and conscientious activity he receives on retirement the title of *medic consilier sanitar*. The new law considerably raised the grades. The old law knew only four grades, each promotion bringing a 15 per cent rise of the salary. The new law is more liberal and provides five grades, each with 25 per cent rise, and the total increase of 125 per cent, together with several additional sources of income, ensures a comfortable livelihood. At the age of 60, every physician may be pensioned on the recommendation of the administrative commission. At 62 all must retire without regard to years of service.

The new law settles also the troublesome question of dental practice by declaring that dentistry can be carried on by duly qualified doctors or dental technicians who have specialized in stomatology. Those dental technicians who gained their right to practice before 1923 may continue their work without disturbance. Those whose license was not recognized by the revision in 1924

if over 42 years of age, will have to pass qualifying examinations in December, while those under 42 will have to attend a regular course, lasting one year, in dental technic and pass a final examination. Only those technicians are justified in applying for admission to the courses who before 1923 had already eight years' practice—two years as apprentices and six years as assistants in laboratories. Those who have passed matriculation examination in a secondary school and attended some foreign high school for dentistry, and obtained a diploma after four years' study, may carry on dental practice in Rumania without further notice. Dental technicians and also dental surgeons are not allowed more than one consulting room.

Diathermy, quartz light, x-ray and ultra short wave apparatus may be owned and used only by qualified physicians. Likewise electrolysis and electrocauterization should be applied by physicians, and this exclusively medical work must not be done by barbers, masseurs, manicurists, chiropodists or cosmetic institutes.

The new law puts a stop to brothels and all undertakings connected with the keeping of prostitutes. Henceforth licensed women will have to present themselves twice a week for medical examination—in towns and cities at the venereal dispensaries, in small towns and villages by the parish doctors.

#### Operative Treatment of Spasmodic Torticollis

Dr. Alexander Pop, lecturer to the university of Cluj, reports the case of a woman, aged 55, who for a period of three years had been the victim of spasmodic torticollis. Pressure at the point of entrance of the spinal accessory nerve of the right side into the sternomastoid muscle caused a temporary cessation of the convulsive movements. Nearly 2 inches (4.5 cm.) of this nerve was removed. While improvement followed the operation, the effect was not curative. Accordingly, ten months later a resection was made of the first, second and third cervical nerves as well as of the obliquus inferior. The result was entirely satisfactory. Freedom from convulsive movements gradually took place, and up to about one year there has been no recurrence.

Dr. Pop found in the literature reports of thirty cases of resection of the cervical nerves with twenty-three cures and seven improvements, twenty-one cases of section of the muscle with nine cures, six improvements and six failures and a great number of resections of the spinal accessory nerve with about one-third complete cures. Pop points out the necessity of resection of the first three cervical nerves in cases in which resection of the spinal accessory nerve is attended with failure.

#### Taxation on Basis of Prescription Writing

The financial administration of the town of Satumare, an industrial center, sent an order to all pharmacists of the town obliging them to keep records of the number of prescriptions written and the value of the drugs ordered on these by each physician and send such lists every month to the assessors' office. Of course, the government officials want to use these data for the taxation of physicians. The pharmacists protested, arguing that physicians being their patrons, should not be obliged to make such records, which do not constitute a reliable criterion of the earnings of a physician. There are many physicians who, for instance, order a domestic liniment, when a young doctor, fresh from the clinic, prescribes three kinds of expensive proprietary medicines. On the other hand, the enactment is apt to be detrimental to the pharmacists as well as to the sick, because the tax would lead to fewer prescriptions—eventually even to the detriment of the health of patients. As the protest made by the pharmacists was of no avail they in company with the physicians appealed to the prefect of the county asking his intervention against the enactment of the financial administration. On the intervention of the prefect the state public prosecuting office instructed the



pharmacists not to obey the enactment, which has no legal basis. He assured them that for not observing this decree no harm can be done to them. The prefect said that the records of pharmacists are just as secret as the diaries of physicians and should not be revealed for such a purpose.

#### Preservatives in Cream

The food department of the ministry of health has during the year been experimenting with the use of preservatives in cream, with the object of delaying the onset of sourness. The department recommended in 1925 that boric acid or mixtures of boric acid and borax should be the only preservatives permitted in cream, and that to a maximum amount of 0.25 per cent expressed as boric acid, the vessels containing the cream being labeled with the amount of the preservative used. The mixture of boric acid and borax is first heated to expel water and afterward reduced to a powder, together with the addition of saccharin or sucrose at times. Sodium salicylate or sodium benzoate is sometimes used in addition. Recent experiments prove that to keep cream sweet and salable for more than three or four days at a temperature of 20 C. (68 F) from 0.2 to 0.3 per cent of "boron" preservative is insufficient but that 0.4 per cent is sufficient. Compulsory labeling of all treated receptacles is necessary, in view of the fact that some traders supply cream guaranteed free from preservatives.

#### Russian-Rumanian Exchange of Students

Professor Nitescu, as the official representative of Bucharest University, at the International Congress of Physiology recently held at Moscow, while there was invited by the leaders of the Moscow faculty of pharmacy to exchange a certain number of students, beginning next year. Both states will erect a special home in which the exchange students will be given free accommodations.

#### Compulsory Graduate Courses for Rumanian Physicians

The ministry of public health has prepared the draft of a new law according to which, beginning in the spring of 1936 graduate study will be compulsory for all physicians living in cities of 50,000 inhabitants and over. The courses will be held in the public hospitals and the chief subject will be internal medicine. Only practical courses will be given and they will last from three to four weeks and will have to be attended once in every five years. The organization of the graduate courses will be the task of the chambers of physicians. Locum tenentes for country physicians attending the graduate courses will be provided by the chambers and the salaries due to them will be contributed by the state.

### Marriages

EDWARD COTTON RAWLS, Stamford Conn. to Miss Jean Beardsley Gledhill of West Norwalk Dec. 21, 1935

ALLAN R. PALMER, San Francisco, to Miss Lucile O. Connelly of Fresno Calif., at Redwood City Nov. 25, 1935

HARRY EUGENE TEASLEY, Hartwell Ga. to Miss Nancy Dorothy Massey of Orlando Fla. Dec. 25, 1935

HERBERT FLAKE READING, Durham N. C., to Miss Sara Whiteman of Atlanta Dec. 22, 1935

BENJAMIN R. LINSOWITZ, Columbia S. C. to Miss Lucy Mae Feller of Newberry, Dec. 26, 1935

ERNEST H. REYNOLDS to Miss Garnette Reynolds both of Mayodan N. C., Dec. 14, 1935

WILLIAM A. O'BRIEN, St. Paul to Miss Virginia M. Benton of Minneapolis Nov. 28, 1935

LEONARD JULIUS RABHAN, Savannah Ga. to Miss Belle Sawilowsky Dec. 25, 1935

CHARLES E. RIESER to Miss Katherine Rosenheim both of New York recently

### Deaths

Charles Godwin Jennings of Detroit, Detroit Medical College 1879, secretary of the Section on Diseases of Children of the American Medical Association 1888-1889, and chairman 1892-1893, and vice chairman of the Section on Medicine in 1919, lecturer in chemistry, 1881-1882 professor of chemistry and diseases of children 1883-1888, professor of physiology and diseases of children, 1889-1893 professor of diseases of children, 1893-1895, professor, practice of medicine and diseases of children, 1895-1910, professor of medicine 1910-1918, Detroit Medical College and Detroit College of Medicine and Surgery, member of the board of trustees of the Detroit College of Medicine and Surgery 1913-1919, past president of the Wayne County Medical Society, Detroit Academy of Medicine, American Pediatric Society, American Therapeutic Society and the American Congress of Physicians, member of the American Clinical and Climatological Association, master of the American College of Physicians, chairman of the board of governors 1927-1931, and vice president and regent in 1931, member of the city board of health, 1903-1907, and president in 1906, served during the World War, consulting physician to the Harper Hospital head of the department of medicine and chairman of the executive committee of the medical board, 1912-1925 consulting physician to the Grosse Pointe Cottage Hospital and chairman of the medical advisory committee, consulting physician to the Children's Hospital of Michigan, Detroit Tuberculosis Sanatorium and the U. S. Marine Hospital attending physician to St. Mary's Hospital 1882-1890 and the Woman's Hospital, 1895-1900, contributed to various textbooks and systems of medicine and to the periodical literature formerly associate editor of *Annals of Clinical Medicine* and *Archives of Pediatrics*, aged 78, attending physician and chairman of the board of trustees and of the medical board of the hospital bearing his name, where he died January 9, of pneumonia.

Ellsworth R. Kirby of Philadelphia University of Pennsylvania Department of Medicine Philadelphia, 1887 Medico-Chirurgical College of Philadelphia 1901 at one time professor of genito urinary diseases at the Medico Chirurgical College of Philadelphia chief medical adviser of the Red Cross during the Spanish-American War director of public health of Philadelphia 1900-1904 member of the city board of health, chief consulting surgeon, Masonic Home at Elizabethtown 1914 formerly on the staff of the Philadelphia General Hospital for twenty-five years medical director, staff of St. Mary's Hospital aged 68, died Dec. 26, 1935, of chronic valvular heart disease.

Thomas Eben Reeks, New Britain Conn., University of Maryland School of Medicine, Baltimore, 1901, member of the Connecticut State Medical Society at one time director of the bureau of preventable diseases, State of Connecticut Department of Health and deputy commissioner of health, past president of the Connecticut Public Health Association and the Connecticut Hospital Association, formerly health officer of New Britain, medical superintendent of the New Britain General Hospital, aged 56, died, Nov. 13, 1935 in the Deaconess Hospital, Boston of adenocarcinoma of the stomach.

Stephen Roman Pietrowicz, Evanston Ill., College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1898 clinical professor of medicine Loyola University School of Medicine Chicago at one time member of the school board, formerly superintendent of the Chicago State Hospital fellow of the American College of Physicians aged 62 chief of staff of St. Mary's of Nazareth Hospital Chicago where he died January 12 of an abscess of the pancreas diabetes mellitus and chronic nephritis.

William August Doeppers of Indianapolis, Indiana University School of Medicine Indianapolis 1916 member of the Associated Anesthetists of the United States and Canada for many years treasurer of the Indiana State Medical Association served during the World War at one time chief deputy county coroner formerly superintendent of the Indianapolis City Hospital, connected with the medical department of Eli Lilly and Company aged 43, died Dec. 5, 1935 of urinary calculi with infection and myocarditis.

George Washington McCaskey, Fort Wayne Ind., Jefferson Medical College of Philadelphia 1877, professor emeritus of medicine Indiana University School of Medicine member and past president of the Indiana State Medical Association member of the American Gastro-Enterological Association fellow of the American College of Physicians past president of the Northern Tri State Medical Association aged 82 died Dec. 30, 1935 of cerebral hemorrhage and cerebral arteriosclerosis.

**Robert Berrien Ridley**, Atlanta Ga., Atlanta College of Physicians and Surgeons, 1902, member of the Medical Association of Georgia, past president of the Fulton County Medical Society, fellow of the American College of Surgeons, served during the World War at various times on the staffs of the Georgia Baptist, Wesley Memorial, Piedmont, Crawford W. Long Memorial hospitals and St. Joseph Infirmary, aged 56, died, Dec. 4, 1935, of heart disease.

**Leopold Schiller** • Milwaukee, College of Physicians and Surgeons, Medical Department of Columbia College, New York, 1882, associate clinical professor of dermatology, Marquette University School of Medicine, formerly connected with the city health department, at one time medical director and superintendent of the South View Hospital, aged 74, on the staff of the Milwaukee Hospital where he died, Dec. 10, 1935, of cardiovascular renal disease.

**Abraham Hardesty Gorrell** • Zanesville, Ohio, Ohio Medical University, Columbus, 1902, past president of the Muskingum County Academy of Medicine, formerly mayor of Zanesville and county coroner, aged 60, on the staff of the Bethesda Hospital, where he died, Nov. 24, 1935, of a self-inflicted bullet wound.

**John Sater Nixon** • Indianapolis, Indiana University School of Medicine, Indianapolis, 1912, member of the Associated Anesthetists of the United States and Canada, aged 48, on the staffs of the City Hospital, St. Vincent's Hospital and the Methodist Hospital, where he died, Dec. 4, 1935, of pulmonary tuberculosis.

**Edgar Tolman Ponder**, Little Rock, Ark., Washington University School of Medicine, St. Louis, 1901, professor of clinical neurology, University of Arkansas School of Medicine, member of the Arkansas Medical Society, for many years associated with the Veterans' Administration, aged 56, died Dec. 7, 1935, of pneumonia.

**Jesse Harper Lander** • Victoria, Texas, Southwestern University Medical College, Dallas, 1910, past president and secretary of the Bee County Medical Society and the Victoria-Calhoun Counties Medical Society, served during the World War, president of the Victoria Hospital, aged 51, died, Oct. 19, 1935.

**Charles G. Loose**, Reading, Pa., University of Pennsylvania Department of Medicine, Philadelphia, 1868, member of the Medical Society of the State of Pennsylvania, aged 89, at various times on the staffs of St. Joseph's Hospital and the Reading Hospital, where he died Dec. 7, 1935, of arteriosclerosis.

**Helmer Andrew Hendrickson** • Edgewater, N. J., Harvard University Medical School, Boston, 1930, member of the Medical Society of the State of New York, aged 33, died Dec. 24, 1935, in the New York Post Graduate Hospital, of acute suppurative pancreatitis, acute cholecystitis and bronchopneumonia.

**Eli Burton Hamel** • Hastings, Neb., St. Louis University School of Medicine, 1903, past president and secretary of the Adams County Medical Society, on the staff of the Mary Lanning Memorial Hospital, aged 61, died, Dec. 17, 1935, of coronary thrombosis and hypertension.

**Hermann K. Tibbetts**, Limerick, Maine, Maine Medical School of Portland, 1904, for many years member of the school board and chairman of the board of health, aged 58, died, Dec. 21, 1935, in the Henrietta Goodall Hospital, Sanford, of myocarditis and cirrhosis of the liver.

**Walter Dixon Price**, Brooklyn, Long Island College Hospital, Brooklyn, 1899, member of the Medical Society of the State of New York, aged 63, on the staffs of the Swedish Hospital and the Prospect Heights Hospital, where he died January 7, of cardiorenal disease.

**Joseph K. Frame**, Millsboro, Del., University of Pennsylvania Department of Medicine, Philadelphia, 1888, member and past president of the Medical Society of Delaware, formerly secretary of the Sussex County Medical Society, aged 74, died, Nov. 15, 1935, of angina pectoris.

**John Ellis Jennings**, St. Louis, University of Pennsylvania Department of Medicine, Philadelphia, 1887, member of the Missouri State Medical Association, fellow of the American College of Surgeons, aged 73, died Dec. 5, 1935, in the Barnes Hospital, of pneumonia.

**Montague Albert Blowers Smith**, Halifax, N. S., Canada, University of the City of New York Medical Department, 1883, formerly professor of clinical medicine, Dalhousie University, Faculty of Medicine, aged 75, was found dead in bed Nov. 13, 1935.

**Cullen Clarence Conerly**, Fisher, La., Memphis (Tenn.) Hospital Medical College, 1904, member of the Louisiana State Medical Society, aged 56, died Dec. 1, 1935, in the Highland Sanitarium, Shreveport, of carcinoma of the stomach.

**Clayton S. Schwenk**, Fort Washington, Pa., Hahnemann Medical College of Philadelphia, 1882, aged 76, died, Dec. 6, 1935, in the Abington (Pa.) Hospital, as the result of a fall in which a pair of surgeon's scissors pierced his lung.

**Louis Fred Reifers**, Colorado Springs, Colo., Indiana University School of Medicine, Indianapolis, 1920, aged 40, formerly on the staff of the Cragmor Sanatorium, where he died Nov. 30, 1935, of pulmonary tuberculosis.

**Edgar Boston Driskell**, Worthville, Ky., Louisville Medical College, 1907, formerly secretary of the Carroll County Medical Society, aged 54, died, Nov. 30, 1935, of injuries received when struck by an automobile.

**Charles S. Philbrick**, Bangor, Maine, Hahnemann Medical College of Philadelphia, 1881, member of the Maine Medical Association, aged 80, died, Dec. 10, 1935, of angina pectoris and cerebral hemorrhage.

**Ernest Jacob Wichterman** • Masontown, W. Va., Chicago College of Medicine and Surgery, 1913, served during the World War, aged 52, died, Dec. 20, 1935, in a hospital at Morgantown, of cerebral hemorrhage.

**Mary M. Nelsen Hotchkiss**, Webster City, Iowa, Hahnemann Medical College and Hospital, Chicago, 1904, member of the Iowa State Medical Society, aged 62, died Dec. 10, 1935, of cerebral hemorrhage.

**James M. Hicks**, Huntington, Ind., Hahnemann Medical College and Hospital, Chicago, 1893, aged 68, died Dec. 5, 1935, in the Muhlenberg Hospital, Plainfield, N. J., of arterio-sclerotic heart disease.

**Joseph Davidson Farrar**, Philadelphia, Jefferson Medical College of Philadelphia, 1890, served during the World War, aged 67, died, Nov. 12, 1935, in the U. S. Naval Hospital, of chronic nephritis.

**Franklin Elisha Babcock**, North Dartmouth, Mass., Jefferson Medical College of Philadelphia, 1890, aged 68, died Nov. 30, 1935, in Taunton, of bronchopneumonia and carcinoma of the stomach.

**Ambrose Roche Ballou**, Boston, Baltimore Medical College, 1905, member of the Massachusetts Medical Society, school physician, aged 54, died suddenly, Dec. 4, 1935, of heart disease.

**Joshua Melvin Blackwell**, Voth, Texas, Tulane University of Louisiana Medical Department, New Orleans, 1900, aged 66, died, in December 1935, in a hospital at Beaumont, of pneumonia.

**Howard Luxmoore Carpenter**, Santa Paula, Calif., Stanford University School of Medicine, San Francisco, 1932, aged 29, died, Nov. 24, 1935, of a self-inflicted bullet wound.

**Calvin Levi Gregory**, Redwood City, Calif., Cincinnati College of Medicine and Surgery, 1874, aged 83, died, Nov. 29, 1935, of arteriosclerosis and cerebral hemorrhage.

**Wyman George Hough**, Malta, Mont., Rush Medical College, Chicago, 1919, formerly county health officer and county physician, aged 40, died, Dec. 7, 1935, of uremia.

**Florence Mary Dunlap** • Brawley, Calif., University of Colorado School of Medicine, Denver, 1927, aged 47, died, Nov. 13, 1935, of pneumonia and diphtheria.

**John Morgan Johnson**, Loving, Texas, Kentucky School of Medicine, Louisville, 1893, aged 66, died Nov. 24, 1935, of chronic myocarditis and bronchial asthma.

**William Starling Bradford**, Harrisburg, Ark., Vanderbilt University School of Medicine, Nashville, Tenn., 1884, aged 75, died, Nov. 25, 1935, of heart disease.

**David Allen Crosby**, Lexington, Ky., Marion-Sims College of Medicine, St. Louis, 1897, aged 71, died Dec. 23, 1935, as the result of an automobile accident.

**Joseph G. Edie**, Nashville, Ga., National Medical University, Chicago, 1891, aged 82, died Nov. 18, 1935, of bronchopneumonia and arteriosclerosis.

**Edward James Graff**, New York, Bellevue Hospital Medical College, New York, 1891, aged 65, died, Dec. 27, 1935, of carcinoma of the colon.

**Charles A. Grimes**, Bastrop, Texas, McHarry Medical College, Nashville, Tenn., 1894, aged 67, died, Nov. 7, 1935, of cerebral hemorrhage.

**Burt J. Maycock**, Buffalo, Hahnemann Medical College and Hospital, Chicago, 1886, aged 71, died, Dec. 28, 1935, of pulmonary abscess.

## Correspondence

### PROTECTION AGAINST POLIOMYELITIS THROUGH BLOCKADE OF OLFACTORY TRACTS OR BULBS OR THEIR TERMINAL FIBERS

To the Editor—In the editorial entitled "The Olfactory Tract and Experimental Poliomyelitis" (THE JOURNAL, Dec 14 1935 p 1986) you mention the experiments of Schultz and Gebhardt (*Proc Soc Exper Biol & Med* 31 728 [March] 1934), who sectioned with an electric cautery the olfactory bulb and tract of monkeys for a distance of 2 cm. The animals proved to be immune to a later intranasal instillation of poliomyelitis virus. Confirmatory experiments were recently made by Lemmette and Hudson (*Proc Soc Exper Biol & Med* 32 1444 [June] 1930), who found also that after intravenous injection of virus, normal control monkeys developed poliomyelitis, while monkeys whose olfactory bulb and tract had been sectioned as above remained free from infection.

These experiments seem to show that a mechanical blocking of the olfactory tract or bulb is capable of effectively preventing the virus of poliomyelitis from traveling toward the brain and spinal cord.

The possibility of effecting a purely chemical blockade within the nasal mucosa against the transfer of poliomyelitis virus beyond the nasal structures seems to be indicated by the recent work of Armstrong and Harrison (*Pub Health Rep* 50 725 [May 31] 1935), who were able to protect monkeys against intranasal instillations of virus by preliminary treatment with intranasal alum injections. I would explain these results on the assumption that the alum fixed by the nasal tissues acts as a mordant for any virus that might penetrate the mucosa, fixing the virus and preventing its migration beyond the nasal passages. Sodium tannate has been found to produce similar results by Sabin, Olitsky and Cox. The fact that protection effected by the tanning agents does not last for more than a few weeks speaks for a superficial tanning effect followed by a desquamation.

With relation to the use of this form of chemical blockade in human beings, two thoughts come to mind. One is that after desquamation of the tanned layer the regenerated epithelium might be even more permeable to poliomyelitis virus than the original. The other is that the exposure of the nasal mucous membrane to a denuding agent such as bile salts—preliminary to or simultaneous with the instillation of tanning agents—might allow the latter to penetrate to a higher cellular level and possibly prolong the protective action exerted by them. This thought is prompted by the work of Besredka who accomplished the enteric immunization against typhoid by the simultaneous administration of bile and typhoid vaccine.

While it is generally assumed that for purposes of systemic immunization, killed virus has lost its antigenic power, it is not absolutely excluded that virus bacteriologically inactivated before instillation—or virus fixed and inactivated by tanning agents within the nasal mucosa—could not if it reached a high enough tissue level produce a local immunity.

It has occurred to me that in addition to a mechanical and chemical blockade against the extension of virus to the brain one might possibly achieve a biochemical blockade through photochemical action on the structures of the roof of the nose (Pekkind, Samuel. A Suggestion for an Experimental Attempt at Local Immunization in Poliomyelitis Through Irradiation of the Portals of Entry. S. P. Mount & Co 1932). The terminal fibers of the olfactory nerve piercing the cribriform plate of the ethmoid come to lie just beneath the mucous membrane of the roof of the nose and are thus easily accessible to intra-

nasal treatment such as irradiation. It has been shown by immunologists (Menkin, Opie and others) that antigens and micro-organisms tend to become fixed in an inflamed tissue (Sherwood Immunology, St. Louis, C. V. Mosby Company, 1935 p 73). Irradiation with light from an ultraviolet lamp produces an actinic injury that results in an inflammatory tissue response. There would be some reason to hope therefore, that irradiation of the upper part of the nasal cavity at an appropriate time before or after the instillation of poliomyelitis virus might so alter the tissues in the upper part of the nose as to render them retentive for poliomyelitis virus. The irradiated tissue would thus act as a barrier to the further extension of the virus.

The effect of this biochemical blockade would be enhanced moreover, by the migration into the irradiated field of large numbers of leukocytes, which, through phagocytic action, would reinforce the fixation process initiated by the irradiation.

The experiment suggested, of irradiating the nose preliminary to or subsequent to the intranasal instillation of poliomyelitis virus, might, if the results should confirm the theory, afford a method of developing a local immunity against poliomyelitis at the portals of entry, thus preventing an extension to the central nervous system.

This communication is written with the hope that some poliomyelitis worker may put the suggestion to the experimental test.

SAMUEL PEKIND, M.D., Cleveland

### WORK ON XANTHINE AND MERCURIAL DIURETICS

To the Editor—In THE JOURNAL, Sept 14 1935 page 887 there appeared an editorial on the action of the xanthine and mercurial diuretics, credit for the fundamental work in this line being given to certain groups of investigators but no mention being made of the concomitant work of Herrmann et al from the Medical College of the University of Texas, at Galveston. As the articles considered in the editorial all quote the work of the Texas group, it is a little surprising that proper credit is not given them in the editorial. Papers by the Texas group on the glomerular action of the xanthines and the tubular action of the mercurials may be found as follows:

Tr. A. Am. Physicians 47 279 1932 48:364 1933  
Herrmann George Stone C. T. Schwab E. H. and Bondurant W. W. Diuresis in Patients with Congestive Heart Failure. THE JOURNAL Nov 12 1932 p 1647  
Herrmann George Schwab E. H. Stone C. T. and Marr W. I. Advantage of Alternating Vegetable and Metallic Diuretics in Treatment of Edema of Congestive Heart Failure. J. Lab. & Clin. Med 18 902 (June) 1933

GEORGE M. DECHERD, M.D., Austin, Texas

### 'SOCIAL SCIENTISTS IN THE MEDICAL FIELD'

To the Editor—I am greatly pleased with the editorial in the January 11 issue of THE JOURNAL entitled "Social Scientists in the Medical Field." In support of your editorial I may say that during the past week I endeavored to make use of data in a paper by Selwyn D. Collins, Ph.D. (*Am. J. Pub. Health* 25 1221 [Nov.] 1935). When I came to analyze the data I found that the word "immunization" as employed by the author is altogether different from that employed by immunologists.

In figure 2 are listed the annual immunizations against various diseases. Included in the list of immunizations are the Schick test and treatments of hay fever and of poison ivy and oak. The tests merely reveal the presence or absence of immunity, while the hay fever and the poison ivy treatments do not confer immunity.

The phraseology used in the text of the paper is incorrect in many respects, for instance, "inoculation against hay fever," "antitetanic vaccination," "immunizing inoculations in hay fever" and "immunizing extracts in hay fever"

Summary 2 has no foundation, since the statement appears to be based on the number of persons immunized with toxin-antitoxin mixture or with diphtheria toxoid, on the number of persons passively immunized with diphtheria antitoxin, on the number of persons given the Schick test

Collins lists six earlier papers which he has written on the results obtained in the study, in which the "8,758 white families surveyed lived in 130 localities in eighteen states" If each of the other six papers is on a par with the one I have been trying to read, I am inclined to think that those who are paying for these studies are receiving information that is confusing because of the use of terms that are not acceptable to immunologists

D. H. BERGEY, M.D., Philadelphia

## Queries and Minor Notes

ANONYMOUS COMMUNICATIONS and queries on postal cards will not be noticed. Every letter must contain the writer's name and address but these will be omitted on request.

### TESTS USED IN STUDYING HYPERTENSIVE DISEASE

To the Editor—In *Queries and Minor Notes* in *THE JOURNAL*, Nov. 30, 1935, page 1793, Hypertensive Disease, you list (1) the amyl nitrite test (Stieglitz E. J. *Arterial Hypertension Arch. Int. Med.* 46: 227 [Aug.] 1930) *Illinois M. J.* 62: 414 [Nov.] 1932) (2) renal functional tests (a) concentration test (Fishberg) (b) diuresis—concentration test (Mosenthal) (c) urea clearance test (d) sodium ferrocyanide test of glomerular efficiency (*THE JOURNAL*, Dec. 8, 1934, p. 1760). Could you publish in brief these tests at some future date? Kindly omit name.

M. D. New Jersey

ANSWER.—The purpose of the amyl nitrite test is to determine the relaxability of the arteriolar walls in hypertensive arterial disease and thus inversely evaluate the degree of arteriosclerosis. It is of no therapeutic value. Quickly acting vasodilator drugs will cause a rapid and profound fall in the arterial tension when the hypertension is due to hypertonia of the arteriolar musculature, but nothing relaxes sclerotic vessels temporarily or permanently.

The technic of the test is simple. With the patient in a comfortable relaxed position, either lying or sitting, the arterial tension is determined. The patient then inhales deeply two or three times of a pearl of amyl nitrite while the arterial tension is measured quickly and repeatedly. The pressure falls rapidly, usually reaching the minimum level in from thirty to fifty seconds. It then rises again, but not quite as quickly. The minimum level is reached just before the intense facial flush appears. As the significant observation is the minimum diastolic tension, it is essential that the readings be made as swiftly as possible or else the minimum level will be missed. Thus it may be desirable to disregard the systolic tension and follow the diastolic tension exclusively.

Interpretation is the most important phase of any test. The approach of the diastolic tension toward or below the normal level constitutes the significant observation. For example, three patients, A, B and C, all of about the same age and with similar degrees of hypertension (220/130 for purposes of comparison), respond quite differently to the amyl nitrite test. A reveals a minimum diastolic tension of 110, B one of 100 and C one of 80 mm. As 90 mm. is the maximum normal diastolic tension, the original abnormality of 40 mm. is halved in the case of A and reduced 75 per cent and 100+ per cent in the cases of B and C. The degree of arteriosclerosis may be considered as just the reverse of these figures. It is now seen that the prognosis for these three men has become dissimilar. Little or nothing can be accomplished for the extensive arteriosclerosis of the first case, whereas the last case shows so little sclerosis that, with proper and effectively prolonged therapeutics, one may hope to accomplish much.

The concentration test of renal function is based on the knowledge that concentration of the urine requires much work on the part of the kidneys. Thus deprivation of water creates conditions requiring increased renal effort and it is always under conditions of stress that inherent weaknesses become manifest. There are many modifications of the concentration

test (originally introduced by Volhard), but that suggested by Fishberg is the most practical for routine use. No fluids or food are consumed from supper time until 10 a. m. the next morning. The first voiding of urine on arising is discarded, but thereafter separate urine specimens are collected at 8, 9 and 10 a. m. The specific gravity of these are determined at room temperature. In the normal person the maximum specific gravity of these specimens will be 1.025 or more, the degree of failure to concentrate to such an extent may be considered a measure of the degree of renal functional impairment.

The test is physiologically sound, practical and simple and has proved to be especially valuable in detecting early impairment of the renal reserve. It is a procedure applicable to office routine. The major source of error is a diuresis due to subsiding edema, which lowers the specific gravity despite the fact that no water is taken by mouth. The test should not be carried out under such conditions.

The Mosenthal, or two hour, test has been repeatedly described in standard textbooks. Briefly, it consists in a thirty-six hour period of controlled fluid intake with urine specimens collected at stated periods in the final twenty-four hours. The actual period of observation starts at 8 a. m. Fluid is taken at 8 a. m., 12 noon and 6 p. m., exactly 600 cc. being consumed with each meal. At 10 a. m., 12 noon and 2, 4, 6 and 8 p. m. complete specimens of urine are collected and then a twelve hour specimen from 8 p. m. to 8 o'clock the next morning. The volume and specific gravity of each specimen are determined. Thus one may observe the promptness with which diuresis occurs following water ingestion, the extent of such diuresis and the ability of the kidneys to concentrate the urine as revealed by fluctuations in the specific gravity.

The specific gravity should vary at least 0.010 in the various samples and normally the night urine volume is about one third of that secreted during the day. Originally Mosenthal used an exact quantitative diet for several days prior to the test and measured the nitrogen excretion. The latter data, however, added little information of truly clinical value. The procedure is more cumbersome than the concentration test. Unless the specimens of urine are accurately collected the test is valueless, for the changes in volume output are most important.

In the opinion of Van Slyke and many others the blood urea clearance is the most sensitive indicator of the state of renal function. By the blood urea clearance is meant the cubic centimeters of blood cleared of urea by the kidneys per minute. Because the volume of urine influences the clearance, this factor must be given consideration. The standard formula employed is

$$\text{Standard Blood Urea Clearance} = \frac{U}{B} \sqrt{V}$$

in which  $U$  is the concentration of urea in the urine,  $B$  the urea concentration in the blood and  $V$  the volume of urine in cubic centimeters per minute. The normal clearance is about 54 cc. per minute for adults. It is claimed that urea clearance may fall to 40 per cent of the normal in nephritis before the phenol sulfonphthalein test reveals impairment and/or before a significant elevation of creatinine or urea occurs in the blood.

The sodium ferrocyanide test of glomerular efficiency is still in the experimental stage of clinical evaluation. It is based on the demonstration that ferrocyanide salts are secreted solely through the glomeruli. The procedure offers promise but requires some special quantitative reagents. A full description of the technic of the test appears in the reference cited in the query, it does not warrant reiteration here.

### TOXICITY OF HEXACHLORETHANE AND CHLORINATED RETENE

To the Editor—Recent research has thrown much light on the value of hexachlorethane and chlorinated retene in oils used as metal cutting fluids. I am anxious to use these materials in place of sulfured oils provided there is no health hazard attached to them. Can you advise me regarding their toxicity, volatility and odor? The cutting fluid consists of 10 per cent hexachlorethane and 90 per cent mineral oil or 10 per cent chlorinated retene and 90 per cent mineral oil.

CHARLES RUBIN, JR., Chemist, Newport, R. I.

ANSWER.—Extensive exact information on the toxicity of either hexachlorethane or chlorinated retene is meager. The guarded statements that follow are predicated on chemical similarity to other substances the toxicities of which are better known. Quite apart from the presence of either in cutting oils, a dermatitis is likely to arise from a variety of causes including the abrading action of minute particles of metal, the plugging up or sealing over of the orifices of the skin, the irritant action of decomposed mineral oils after long use, or the presence of bacteria in the cutting compounds.

Hexachlorethane ( $C_2Cl_6$ ) is a solid material possessing a camphor-like odor. This substance has been used in ointments for the skin as an analgesic and internally in such doses as from 0.25 to 0.5 Gm. The boiling point of this compound is near 185 C. If vapors were produced it is believed that their action would be similar to those of chloroform and of carbon tetrachloride and thus distinctly toxic. Used in cutting compounds it is reasoned rather than proved, that injurious action if any, would be limited to the causation of an increased incidence of skin disorders. The internal use of this substance in veterinary medicine has disclosed evidences of marked gastro intestinal and renal irritation. Retene (methyl-isopropyl-phenanthrene  $C_{18}H_{18}$ ) has a boiling point of about 390 C. This substance is primarily obtained from wood tar but may be obtained in the higher fractions of coal tar near anthracene. Thus it lies in the fractionation range that is known to harbor carcinogenic agents. Most of the phenanthrene compounds are distinctly toxic for animals. Many of these compounds act as analgesic, depressant and emetic agents. The high boiling point of this substance should eliminate the prospect of injury from inhaled vapors in connection with use in cutting compounds, but the occurrence of skin irritation remains as a possibility. At this time the protective use of these substances, from the point of view of toxicity, cannot be praised or condemned owing to the lack of sufficient information. Before practical application to industry on any large scale suitable investigative work should be instituted to establish the absence of opportunities for injury to workmen.

#### LOCALIZED SWELLINGS AFTER PELVIC OPERATION

To the Editor—I have a patient about 35 years of age a woman Mexican on whom about nine months ago a pelvic operation was performed by another surgeon here. The tubes and appendix were removed. About three months ago she complained of a swelling of her right arm and leg. The swelling is not painful but when she has worked all day she states that there is numbness especially in the right arm. The difference in size of the right arm and breast are now quite noticeable. There is no pitting of the skin and the arm is equal in color and warmth to that of the left arm. Roentgen examination shows no evidence of a cervical rib. The Wassermann reaction is negative. The heart and lungs are normal. She has lost no weight and feels well except for the numbness in the right arm which comes on about evening. The case has rather puzzled me from a diagnostic standpoint. I would appreciate suggestions for treatment.

O J HANSEN MD Redding Calif

ANSWER—Ordinarily there is no connection between a pelvic operation and edema of an arm, breast and leg. However if for some reason a premature menopause is induced as the result of a pelvic operation swellings such as described in this case may be observed. Local adiposities, especially of the arms are not rare even in the natural menopause. The cause is a disturbance in one or more of the endocrine glands and perhaps also a dysfunction of the vegetative nervous system. Since the etiology of such edemas is not definitely known treatment cannot be specific. Maranon (The Climacteric St. Louis, C V Mosby Company 1929 p 346) obtained quick relief in one case by administering thyroid hypophyseal and ovarian therapy.

#### FACTORS MODIFYING BONY UNION

To the Editor—1 Does age debilitate disease or syphilis interfere with bony union? 2 Is there an increasing belief that all types of extension in the treatment of long bone fractures tend toward joint involvements ankylosis and general stiffening of the member? 3 Has experience justified the use of noncorroding pins through bones to aid extension? What is the trend?

E O HARROLD MD Marion Ind

ANSWER—I Bony union occurs more slowly in people of advanced age or in the presence of debilitating disease. The influence of syphilis on the healing of fractures has not been definitely established. In almost all cases of syphilis fractures unite as rapidly as in normal persons of equal age. 2 Extension in the treatment of fractures of the long bones does not produce ankylosis or joint involvement. It does however tend to lessen the flexibility of the capsule of the joint if continued for a long time especially in adults. The muscles also tend to become stiffened and atrophied by disuse thereby limiting at least temporarily the motion in the joints. It is therefore of great importance to provide for motion in the joints whenever this can be done during the healing of the fracture. Massage and active contraction and relaxation of the muscles will be of distinct benefit.

3 In cases in which sufficient traction cannot be obtained by adhesive plaster or by Heuser's or Sinclair's glue skeletal traction by Steinman's nail or Kirschner's wire is satisfactory and reasonably safe. It requires constant supervision and com-

plete surgical cleanliness but allows the use of heavier traction with less discomfort. The trend is distinctly toward skeletal traction, especially when injury to the skin and soft tissues makes skin traction difficult or when very heavy weights are necessary for proper reduction of the fracture.

#### TRICHLOROETHYLENE IN ANGINA PECTORIS

To the Editor—Reports appearing in the Associated Press news Dec 30 1935 indicated that trichloroethylene was of permanent effect in the treatment of angina pectoris. Was this statement correct?

M D Chicago

ANSWER—The report referred to contained the following statement

Instantaneous relief for the pain of angina pectoris and complete cure for most sufferers from the disease was claimed today by Dr John C Krantz Jr of the University of Maryland in a report which he read to the American Association for the Advancement of Science.

The cure he said is a drug called trichloroethylene one cubic centimeter of which is snuffed into the nose when the pains and heart compression of angina pectoris begin. It gives relief within one second. Used to date on twenty human patients Dr Krantz said it had given permanent relief to eighteen of them. He explained that these eighteen were apparently completely cured with no other treatment. The other two cases failed to benefit he said.

Dr Krantz is professor of pharmacy in the medical college of the University of Maryland. Joining him in the report were C Jeleff Carr Ruth Nusser and William Harne of the University of Maryland.

The treatment Dr Krantz said is still somewhat mysterious in its mechanism but it apparently acts to clear obstructions in its blood vessels which feed the heart. In angina pectoris he explained these coronary vessels lose tone and decrease the supply of oxygen being carried to the heart in blood pumped to it.

An inquiry was sent to John C Krantz Jr, Ph.D., professor of pharmacology at the University of Maryland School of Medicine. Dr Krantz replied as follows

My associates and I reported at the Section of Medical Sciences of the American Association for the Advancement of Science the mechanism of the action of trichloroethylene in the treatment of angina pectoris which was studied clinically in the institution by Dr William Love Jr. The accounts of our pharmacological studies appear in the following journals: *J Pharmacol & Exper Therap* 54 327 1935 *Proc Soc Exper Biol & Med* 32:334 1934 *J Am Pharm A* 24:1754 1935 *Arch internat de pharmacodynamie et de therapie* in press.

It is unfortunate that the Associated Press misinterpreted the presentation and stated that we had discovered a cure for the disease. Dr Love's patients were relieved in most cases from the distress and apprehension of angina pectoris by the inhalation of 1 cc of the drug morning and evening.

I shall be pleased if you will emphasize to those who inquire from you the fact that we have not discovered a cure for angina pectoris.

It may be pointed out that trichloroethylene is a drug to be prescribed with caution.

#### HYPERTHYROIDISM AND ENDOCARDITIS

To the Editor—Some years ago a patient was given radium to control menorrhagia. Following this enlargement of the thyroid gland was noted. Radium was again used on this gland resulting in a severe reaction. Following this toxic symptoms developed. Operation for goiter was advised but refused. Another physician was consulted and alternate monthly treatments with iodine and cod liver oil brought marked improvement and gain in weight. No return of symptoms occurred for several years. At present the patient is under my care and complains of stiffness and pain in the hands arms and legs. Loss of weight nervousness insomnia excessive perspiration and fever. The patient is now 43 and has a markedly irregular heart definite enlargement of the thyroid gland and swelling of the small joints of both hands. The temperature ranges from 99 to 102 F. The pulse is from 80 to 110 (irregular). The basal metabolic rate is +45. The blood count reveals 10 000 leukocytes 20 per cent lymphocyte 80 per cent polymorphonuclears and hemoglobin 80 per cent. Urinalysis reveals albumin 1+ and is otherwise negative. Treatment has consisted of complete rest in bed compound solution of iodine digitalis sedatives at night a high carbohydrate diet and colicine and aminopyrine as needed. I would appreciate suggestions regarding further treatment with particular reference to use of x rays with do age time of administration and so on. Would cardiac irregularity and rheumatic pain contraindicate the use of roentgen treatment?

M D New Jersey

ANSWER—The presence of a persistent daily fever to 102 F and arthritic symptoms would strongly suggest not hyperthyroidism alone but also endocarditis. Definite recession of the metabolic rate and clinical improvement during the first two or three weeks of iodine administration would speak strongly for hyperthyroidism and if this is true a thyroidectomy should be advised. The unfortunate reaction to irradiation of the thyroid in the previous thyrotoxicosis suggests that it would be unwise to use it again while the cardiac irregularity does not contraindicate surgical intervention.



## EPILEPSY WITH PSYCHIC ELEMENT

*To the Editor*—An epileptic woman has been suffering with the attacks for ten years. She is married and had a premature labor seven years ago (about the seventh month) and she had already tried all types of treatments advised by her physicians but without any results. Examination of the blood revealed a negative Wassermann reaction, a positive Kahn reaction, urea and sugar normal, the urine normal except for a slight trace of albumin, the genital organs normal except for tenderness on the right ovary which the patient says is almost continuous. The curious thing about her attacks is that they come on always after intercourse with her husband and she remembers that the first attack was after a menorrhagia (probably an early abortion). After a condom was used to eliminate seminal absorption as a cause, the attack repeated on the next night for they are nocturnal attacks coming about 6 to 8 p. m. and are almost continuous, sometimes the attack is repeated from three to six times. She goes to sleep only with the help of morphine. After the attack she is in a state of semihallucination for a day or two. What is the relation of sexual intercourse to the attack? Is there any hypersecretion or hyposecretion of ovarian hormones here or a simple irritation? What treatment is recommended (she is using now a bismuth compound and iodine)? Is ovariectomy indicated in these cases without any tumor and if there was a tumor would operation relieve the state? Kindly give an outline of causes and treatment of epilepsy. Please omit name and address.

M D Brazil

**ANSWER**—The patient's age has not been stated but it is taken for granted that she is relatively young. The ovarian tenderness probably has no relation to the attacks and there is no indication in the clinical history that any ovarian disturbance exists. Ovariectomy is not at all indicated.

The fact that these attacks always come on after intercourse with her husband suggests that this is a form of epilepsy which has a large psychologic factor in its etiology. The indicated treatment is based on the unearthing of the probable causative factors. The use of phenobarbital, which is usually recommended in increasing doses for cases of epilepsy in which the constitutional factors predominate, is not indicated in this case at the present time. A careful psychiatric study is the first procedure to institute.

DANGER OF NEEDLE PRICK DURING OPERATION  
ON SYPHILITIC PATIENT

*To the Editor*—While performing an abdominal operation I inadvertently pricked my left index finger with a needle at its distal end on the palmar surface. The fact that the patient has a 4 plus Wassermann reaction has a bearing on the seriousness of this unfortunate accident. However, the records reveal that the patient was admitted to Sing Sing prison Dec 30 1933. The Wassermann report at that time was 4 plus. He received five injections of a bismuth compound of 2 cc each, two injections of neoarsphenamine of 0.45 Gm, and three injections of neoarsphenamine of 0.6 Gm each. He was transferred to the institution for male defectives June 2 1934. The Wassermann report was 4 plus. During his residence here he received ten injections of sulfarsphenamine of 0.3 Gm each, thirty-five injections of a bismuth compound of 0.1 Gm each, and the last treatment was given on April 29. The Wassermann reaction was 4 plus April 22. The site of the needle prick never bled and shows only slight sensitivity. A thorough examination of the inside of the glove revealed no evidence of blood. Soon after the accident 33 per cent ointment of mild mercurous chloride was thoroughly rubbed in at the site of the puncture. For the present I shall endeavor to check up the patient's blood and spinal fluid Wassermann reactions and within three weeks I shall check up my own blood and continue to do so the following several weeks and then once a month for a full year. I hope though that the 'break' will be in my favor. I will greatly appreciate your advice as to treatment.

M D New York

**ANSWER**—The danger of infection under the circumstances outlined is practically nil. The patient in question has had syphilis at least two years and has received fifteen injections of an arsenical drug and forty injections of a bismuth compound. The only practical danger of accidental infection by a needle prick is from a patient with untreated early syphilis or from an individual with obvious signs of infectious mucocutaneous relapse. A needle prick involving blood from a patient who has had syphilis more than four years, whether treated or untreated, need not be feared. For the sake of the correspondent's peace of mind, a Wassermann follow up might be carried out at intervals of every two weeks for a maximum period of four months. It is not necessary to continue such a follow up for one year. No antisyphilitic treatment is indicated. Proper prophylaxis under these conditions involves immediate laying open of the wound to the approximate depth of the needle prick and packing with 33 per cent ointment of mild mercurous chloride, which is left in situ for twenty-four hours. The prophylactic use of arsphenamine is to be avoided since its efficacy is not proved and since it may only suppress the lesions of syphilis rather than prevent infection.

The present status of the patient's blood and spinal fluid serologic reactions has no bearing on his potential infectiousness, which instead depends entirely on the duration of the disease in him.

## MENINGOMYELITIS

*To the Editor*—A Filipino woman aged 45, a decimpara, had fever of two weeks duration over two months ago followed by paralysis and loss of sensation of both lower extremities and inability to urinate and defecate voluntarily. The paralysis and loss of sensation gradually ascended to the neck including the upper extremities. The blood Wassermann reaction was negative. Roentgen examination of the spinal column showed nothing pathologic. I am undoubtedly dealing with a case of diffuse myelitis of the ascending type. My treatment is purely symptomatic consisting of systematic catheterization, urinary antiseptics, prevention of bedsores, strychnine, potassium iodide, massage and faradization. The progress of the lesion seems to have stopped as the patient regained some of the power of her left arm. Kindly advise me as to the best method of treatment in this case. Do you think that the patient will fully recover? If so, after how long? An x-ray specialist promised to cure her but because of her physical condition she could not be brought to his office. She used to complain of some heaviness on her chest and difficulty of respiration. These are sometimes relieved by oxygen inhalation and injection of lobeline.

M D Philippine Islands

**ANSWER**—This case is probably one of the unusual ascending meningomyelitis types. It is unusual in that the inflammation did not continue to ascend into the medulla oblongata and cause respiratory paralysis and death. A careful manometric study of the spinal fluid should be made to determine the presence of spinal block. If the latter is present, an exploratory laminectomy should be performed at the level where the highest or uppermost objective neurologic signs indicate. The prognosis under any circumstance should be guarded. Occasionally this type of patient makes a sufficient amount of recovery to walk again. The time required for such a recovery may be from weeks to months. If laminectomy is not done, the following regimen is suggested. The patient should be on an air or water mattress to prevent decubitus. The urinary bladder should be the object of careful hygiene by the insertion of a permanent catheter under aseptic means. Potassium permanganate or mild protein silver should be instilled into the urinary bladder every third day. A high caloric diet and copious amounts of liquids should be prescribed. The skin of the patient should be kept as dry as is humanly possible. Light massage (daily) should be given to all paralyzed and weak extremities. Galvanic current stimulation should be given involved muscles of the extremities if there is no reaction of degeneration. Medication is usually of little value.

## CUTANEOUS REACTION TO GONOCOCCUS FILTRATE

*To the Editor*—Today I injected Parke Davis & Co's gonorrheal filtrate (Corbus Ferry) into three individuals as follows: (1) known to be free from gonorrhea, (2) with suspected but unproved gonorrhea, and (3) known to have gonorrhea. In case 1 the reaction was less than 2 cm in diameter while in cases 2 and 3 the reaction exceeded 4 cm in diameter. Patient 2 is a woman and I am almost certain that she is the source of infection in case 3. Cervical smears have been negative on two occasions. Will you please comment on the interpretation of the reaction and its significance, if any?

PAUL K. JENKINS, M.D. Miami Beach, Fla.

**ANSWER**—The correspondent does not state the size of the dose given. Normal persons often give a cutaneous response to intradermal injection of 0.5 cc. of the bouillon filtrate, even in dilutions as low as 1:1,500. A cutaneous response in the susceptible individual and in the infected individual is caused by the local irritation of the toxin in patients allergic to the gonococcus. The cutaneous reaction that follows injection of the standard (Corbus-Ferry) bouillon filtrate cannot be interpreted as a diagnostic test, as it occurs in normal as well as infected individuals.

## HEADACHES DUE TO SYPHILIS

*To the Editor*—A man aged 37, white, a hickster, developed severe occipital headaches five weeks ago. The past history is negative except that he thinks he had similar but milder headaches three years ago. The physical examination was negative except for knee reflexes that are somewhat overactive. The Romberg sign is negative. Laboratory examination was negative except for a blood Wassermann reaction of plain 2 plus and cholesterol 3 plus. The spinal fluid Wassermann reaction was negative. There was increased globulin and increased lymphocytes. The colloidal gold curve was 1233211000. I have diagnosed this as a case of cerebrospinal syphilis. What treatment would you recommend?

M D New Jersey

**ANSWER**—If the patient's headaches are due to syphilis, it seems likely, although not certain, that it is most probably due to a basilar meningitis. This process usually responds favorably to antisyphilitic treatment. One would suggest that the patient be given three or four intramuscular injections of an insoluble salt of bismuth at weekly intervals and then neoarsphenamine intravenously, the dosage varying from an initial one of 0.3

Gm to 0.75 Gm. for from eight to ten weeks. For the first five weeks of treatment, ascending doses of sodium iodide by mouth, beginning with 0.65 Gm three times a day and increasing to 2 Gm., should be given. By the time the course of neosphenamine is finished the patient should be free from symptoms. If not the case should then be reviewed again for other causes of pain. If nothing else is found, one might then resort to tryparsamide.

#### SODIUM TAUROCHOLATE—MANNITOL HEXANITRATE

To the Editor—I am interested in using oleic acid and sodium taurocholate as a chologogue in a patient who had a cholecystectomy some years ago, but I cannot learn from the literature at hand what should be the dose and what preparation is used. I would appreciate it greatly if you could supply me with this information and some citations to the literature. Also in the May 25 1935 issue of THE JOURNAL is mentioned mannitol hexanitrate as a remedy in arterial hypertension. Can you inform me where this drug can be obtained and what is the dose and something of the literature? It is not given in the recent edition of Merck's index.

D. R. BARR, M.D., Grand Rapids, Mich.

ANSWER.—Oleic acid is given in 0.5 cc capsules one or two of which are best taken in the morning on an empty stomach.

Sodium taurocholate may be given in doses of 0.12 to 0.4 Gm in keratin coated pills to prevent solution until it reaches the bowels.

Mannitol hexanitrate is marketed in 0.06 Gm tablets by W. H. Martindale, 12 New Cavendish Street London England. One may begin with one-half tablet three times daily and gradually increase the dose until the desired effect is attained. Information regarding it may be secured from "The Extra Pharmacopoeia" or Martindale and Westcott (H. K. Lewis and Company, London) also the U. S. Dispensatory, edition 21, part II, page 1395. J. B. Bradbury (Brit. M. J. 1895, part II) has studied it as a member of a series of nitrated alcohols.

#### STATISTICAL DATA ON HUMAN SKELETON

To the Editor—I should like to have references to information on the height and weight of the human skeleton at various ages and for both sexes. Is information available in textbooks or articles giving the percentage of fat, muscle and water in the human body comparable to the analyses by Atwater and others who have tabulated the composition of various foodstuffs to show the percentage composition in protein, fat and water?

HORRIS M. JONES, M.D., Chicago

ANSWER.—The best single source of information concerning statistical measurements of the human body, both anatomic and physiologic, is Vierordt's Tabellen (last edition, Jena, Gustav Fischer, 1906).

The height of the human skeleton is practically the height of the body. This is 50 cm at birth and as follows at the end of each successive year thereafter from 1 to 25 years (Lilibrzik).

|      |     |     |     |
|------|-----|-----|-----|
| 56.9 | 97  | 133 | 165 |
| 63.7 | 103 | 139 | 167 |
| 70.5 | 109 | 145 | 169 |
| 77.3 | 115 | 151 | 171 |
| 84.2 | 121 | 157 | 173 |
| 91   | 127 | 163 | 175 |

The weight of the skeleton is 305.3 Gm at birth, 8,590 Gm at 22 and 11,080 Gm at 33.

The percentage of fat, muscle and water as well as the weight of various organs at different stages of development may be found in Vierordt's Tabellen (pp 34 to 44 inclusive).

#### UNILATERAL SWEATING

To the Editor—In this department of THE JOURNAL January 11, 1935, the lesions associated with unilateral sweating were enumerated as follows: epidemic (lethargic) encephalitis; lesions of the brain stem and tumors involving the brain stem and occasionally unilateral frontal lobe lesions. Such a list leaves a distinct impression that a symmetrical perspiration is a symptom of ominous import. It should be pointed out that this symptom by no means implies a permanent menacing lesion in the central nervous system. Asymmetrical perspiration appears not infrequently in migrainic individuals. It is most commonly manifest during the attacks but may rarely appear in the absence of acute symptoms. Localized areas of skin may sweat profusely while neighboring areas are dry. With the hemicranic cephalalgia other symmetrical phenomena such as scotomas are not unusual. Migraine although often intractable to therapy is not a menace to life and therefore deserves emphatic inclusion in any list of disturbances associated with asymmetrical sweating.

The mechanism of such unilateral perspiration is unexplained but one may offer as a tentative suggestion the ill defined but obvious defect in the equilibratory mechanism of the circulatory system which is characteristic of the migraine physique (for J. M. A. 1935: 149 [March]).

EDWARD I. SIEGEL, M.D., Chicago

## Medical Examinations and Licensure

### COMING EXAMINATIONS

ALASKA: Juneau March 3. Sec. Dr. W. W. Council. Juneau.  
AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: Written examination for Group B applicants will be held in various cities throughout the country March 14. Oral examination for Group A and B applicants will be held in Kansas City Mo. May 11-12. Sec. Dr. C. Guy Lane 416 Marlboro St. Boston.

AMERICAN BOARD OF OBSTETRICS AND GYNECOLOGY: Written examination and review of case histories of Group B applicants will be held in various cities of the United States and Canada March 28. Applications must be filed not later than February 28. Oral clinical and pathological examination of all candidates will be held in Kansas City Mo. May 11-12. Applications must be received not later than April 1. Sec. Dr. Paul Titus 1015 Highland Bldg. Pittsburgh (6).

AMERICAN BOARD OF OPHTHALMOLOGY: Kansas City Mo. May 11 and New York Sept. 26. All applications and case reports must be filed sixty days before date of examination. Asst. Sec. Dr. Thomas D. Allen 122 S. Michigan Ave., Chicago.

AMERICAN BOARD OF ORTHOPEDIC SURGERY: Kansas City, Mo. May. Applications should be filed with the secretary before April 15. Sec. Dr. Freemont A. Chandler 180 N. Michigan Ave. Chicago.

AMERICAN BOARD OF OTOLARYNGOLOGY: Kansas City Mo., May 9. Sec. Dr. W. P. Wherry 1500 Medical Arts Bldg. Omaha.

AMERICAN BOARD OF PEDIATRICS: Kansas City Mo. May 9. Sec. Dr. C. A. Aldrich 723 Elm St. Winnetka Ill.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: St. Louis, Mo. May 8-9. Sec. Dr. Walter Freeman 1028 Connecticut Ave., Washington D. C.

AMERICAN BOARD OF RADIOLOGY: Kansas City Mo. May 8-10. Sec. Dr. B. R. Kirklin Mayo Clinic Rochester Minn.

ARIZONA: Basic Science Tucson, March 17. Sec. Dr. Robert L. Nugent Science Hall University of Arizona Tucson.

CALIFORNIA: Los Angeles March 9-12. Reciprocity Los Angeles March 18. Sec. Dr. Charles B. Pinkham 420 State Office Bldg. Sacramento.

CONNECTICUT: Regular Hartford March 10-11. Endorsement Hartford, March 24. Sec. Dr. Thomas P. Mordock, 147 W. Main St. Meriden. Homoeopathic Derby March 10. Sec. Dr. J. H. Evans 1488 Chapel St. New Haven.

IOWA: Des Moines Feb. 25-27. Div. of Licensure and Registration Mr. H. W. Greife Capitol Bldg. Des Moines.

MAINE: Portland March 10-11. Sec. Board of Registration of Medicine Dr. Adam P. Leighton 192 State St. Portland.

MASSACHUSETTS: Boston March 10-12. Sec. Board of Registration in Medicine Dr. Stephen Rushmore 413 State House Boston.

NATIONAL BOARD OF MEDICAL EXAMINERS: Parts I and II Feb. 12-14 May 6-8 June 22-24 and Sept. 14-16. Ex. Sec. Mr. Everett S. Elwood 225 S. 15th St. Philadelphia.

NEW HAMPSHIRE: Concord March 12-13. Sec. Board of Registration in Medicine Dr. Charles Duncan State House Concord.

OREGON: Basic Science Portland March 21. Sec. Mr. Charles D. Byrne University of Oregon Eugene.

PUERTO RICO: San Juan March 3. Sec. Dr. O. Costa Mandry, Box 536 San Juan.

VERMONT: Burlington Feb. 12. Sec. Board of Medical Registration Dr. W. Scott Day Underhill.

WEST VIRGINIA: Charleston March 16. State Health Commissioner Dr. Arthur E. McClure Charleston.

WYOMING: Cheyenne Feb. 10-11. Sec. Dr. G. M. Anderson Capitol Bldg. Cheyenne.

### Florida November Examination

Dr. William M. Rowlett secretary, State Board of Medical Examiners, reports the examination held in Tampa, Nov. 11-12, 1935. Fifty-seven candidates were examined, 49 of whom passed and 8 failed. The following schools were represented:

| School  | PASSED | Year Grad | Per Cent |
|---|--------|-----------|----------|
| George Washington University School of Medicine   | (1929) | 79.7      |          |
| Georgetown University School of Medicine          | (1932) | 86.8      |          |
| Howard University College of Medicine             | (1934) | 77.9      |          |
| Emory University School of Medicine               | (1930) | 80.3      |          |
| University of Georgia School of Medicine          | (1933) | 85.5      | 78.6     |
| Chicago College of Medicine and Surgery           | (1915) | 75.7      |          |
| Northwestern University Medical School            | (1933) | 84.1      |          |
| University of Illinois College of Medicine        | (1917) | 79.5      | 80.6     |
| Tulane University of Louisiana School of Medicine | (1930) | 75        |          |
| Johns Hopkins University School of Medicine       | (1922) | 79.4      |          |
| Harvard University Medical School                 | (1929) | 84.4      | 79       |
| Detroit College of Medicine and Surgery           | (1927) | 76.1      |          |
| University of Minnesota Medical School            | (1930) | 83.4      |          |
| Barnes Medical College, St. Louis                 | (1933) | 77.9      |          |
| St. Louis University School of Medicine           | (1932) | 80.9      |          |
| Creighton University School of Medicine           | (1932) | 76.2      |          |
| Cornell University Medical College                | (1905) | 77.3      | 84.2     |
| New York Medical College and Hospital for Women   | (1911) | 75.5      |          |
| Syracuse University College of Medicine           | (1917) | 79.7      |          |
| Duke University School of Medicine                | (1932) | 79.4      |          |
| Medical College of Ohio                           | (1931) | 75        |          |
| University of Cincinnati College of Medicine      | (1934) | 87.2      | 85.5     |
| Western Reserve University School of Medicine     | (1928) | 84.4      |          |
| University of Oklahoma School of Medicine         | (1935) | 84.4      |          |
| Jefferson Medical College of Philadelphia         | (1928) | 90.7      |          |
| Temple University School of Medicine              | (1933) | 76.8      |          |
| University of Pittsburgh School of Medicine       | (1935) | 79.5      |          |
| University of Tennessee College of Medicine       | (1926) | 81.5      |          |
| Van derbilt University School of Medicine         | (1915) | 76.4      |          |

|  |        |      |          |
|--|--------|------|----------|
| University of Toronto Faculty of Medicine                | (1927) | 86 6 |          |
| McGill University Faculty of Medicine                    | (1897) | 83 3 |          |
| Universidad de la Habana Facultad de Medicina y Farmacia | (1928) | 81 7 |          |
| School   | FAILED | Year | Per Cent |
| Howard University College of Medicine                    | (1934) | 72 1 |          |
| Emory University School of Medicine                      | (1934) | 70 9 |          |
| Baltimore Medical College                                | (1903) | 65 8 |          |
| Bellevue Hospital Medical College                        | (1894) | 69 6 |          |
| University of the City of New York Medical Department    | (1891) | 69 6 |          |
| Memphis Hospital Medical College                         | (1901) | 69 6 |          |
| University of Tennessee College of Medicine              | (1928) | 73 8 |          |
| Vanderbilt University School of Medicine                 | (1910) | 71 6 |          |

\* This applicant has received an M B degree and will receive his M D degree on completion of internship

### Mississippi Reciprocity Report

Dr R N Whitfield, assistant secretary, Mississippi State Board of Health, reports 6 physicians licensed at the meeting held in Jackson, Dec. 5, 1935. The following schools were represented

| School                                      | LICENSED BY RECIPROCITY | Year Grad | Reciprocity with |
|---|-------------------------|-----------|------------------|
| Birmingham Medical College                  |                         | (1914)    | Alabama          |
| Northwestern University Medical School      |                         | (1892)    | Illinois         |
| University of Louisville Medical Department |                         | (1911)    | Kentucky         |
| University of Tennessee College of Medicine |                         | (1934)    | Louisiana        |
| Vanderbilt University School of Medicine    |                         | (1931)    | Tennessee        |
| Medical College of Virginia                 |                         | (1931)    | N Carolina       |

## Social Medicine and Medical Economics

### SYPHILIS IN PREGNANCY

#### Report of a Study

MAX J FANNER, M D  
NEW YORK

While the congenital form of syphilis presents the most tragic and destructive aspect of the disease and the one most resistant to treatment it is now well known that it is in many ways the most easily preventable. An abundance of experience has shown that if the syphilitic pregnant woman can be brought under modern treatment early in pregnancy and treatment continued through pregnancy the transmission of the disease to the child can be prevented in almost all cases that in women brought under treatment by the middle of pregnancy about 95 per cent of the offspring will be protected and that even treatment begun any time after the middle of pregnancy still serves to protect a surprising proportion of children from infection before birth. The fact that, by timely treatment of the syphilitic pregnant woman, one can with reasonable certainty assure the birth of healthy children from mothers still syphilitic is surely one of the most striking achievements of preventive medicine. If the means of prevention in the physician's hands could be generally applied, congenital syphilis could be quickly eradicated.

The crux of the matter lies in early diagnosis and treatment. Clinical evidence alone is extremely unreliable, since during most of the course of syphilis no clinical evidence of its presence appears, and this is particularly true in pregnancy because pregnancy itself tends to repress clinical manifestations. A very large measure of reliance for diagnosis, however, may be placed in serologic tests. While it is true that in a small proportion of cases in which the blood test is negative the mother may infect the child repeated blood tests, made on suspicion of the disease, will reveal most of these cases also.

The virtual eradication of congenital syphilis becomes possible by making a blood test early on every pregnant woman and bringing the positive cases under early treatment. As a measure of progress toward this desired end the question becomes important as to how generally the blood test has been adopted as a routine procedure in obstetric practice.

For several years fairly reliable and impressive data have been available as to the prevalence of syphilis among women

who attend public clinics but almost no data as to its occurrence among women in private obstetric practice. The American Social Hygiene Association undertook to secure data as to the use of blood tests for syphilis and subsequent treatment both among antepartum clinics and in the private practice of obstetricians.

#### SEROLOGIC TESTS IN ANTEPARTUM CLINICS

A questionnaire was sent to representative antepartum clinics in all parts of the United States. Replies giving data requested were received from 268 clinics. The questions and a digest of the replies to them are presented herewith.

**QUESTION 1** How many antepartum cases were registered for care in your clinic in 1934?

The clinics were requested so far as possible to make report for a period of three or four years, hence some report for one year only, others for two to four years. The total number of antepartum cases included in the study was 219,659.

**QUESTION 2** Do you make a blood test for syphilis as a routine in all antepartum cases? If not, what is your practice in the matter?

Of the 268 clinics, 250 (93 per cent) report making blood tests as a routine procedure, and eighteen clinics not as a routine but only on "indication." This presents a very encouraging outlook so far as antepartum clinics are concerned. Rapid progress has been made in very recent years in the adoption of the practice of making blood tests as a routine. A large number of clinics report having begun this practice within the past two years. The progress made in this matter is suggested by comparison with a study of antepartum clinics made in 1925 by a committee of the Medical Women's National Association in cooperation with the American Social Hygiene Association, in which only 42 per cent of thirty-seven clinics scattered throughout the United States reported making blood tests for syphilis as a routine, as compared to 93 per cent in the present study. It can be said that no antepartum clinic can any longer be looked on as being in line with modern ideas and practice which fails to make blood tests as a routine on all pregnant women who attend.

**QUESTION 3** In your antepartum clinic, what proportion of cases have been found syphilitic, (a) white, (b) Negro?

A report for a number of years would be appreciated. Unfortunately a large proportion of the clinics failed to indicate whether the report was for white or for Negro patients or both. A surprisingly large number stated that no distinction as to race is made in their records.

Seventy-four of the clinics indicate that they report for white patients only. These embrace a total of 62,516 patients. Of these 3,783 were found positive, this being about 6 per cent.

Only eleven clinics indicate they are reporting for Negro patients only. These include a total of 1,708 cases, of which 308 or 18 per cent, are reported positive. This means that among Negro cases in this group, three times as many were found syphilitic as among white patients.

Fifty-nine clinics state that they are reporting for both white and Negro patients but do not give the respective numbers. These embrace a total of 44,855 cases. Of these, 2,460 or 5.5 per cent, were found positive. This comparatively low rate is doubtless accounted for by the fact that in most of these clinics only a very small proportion of Negro cases are included hence the positive percentage approaches so nearly that of the white group reported.

Sixty-four of the clinics report the respective percentages of white and Negro positive cases without giving the numbers from which the percentages are derived. This enables us to make the sample comparisons of syphilis rates among white and Negro patients given in table 1.

In only 2 per cent of clinics is the white syphilis rate over 12 per cent, whereas for Negroes the syphilis rate is more than 12 per cent in 48 per cent of the clinics. In 89 per cent of the clinics the syphilis rate for white patients is not over 5 per cent.

**QUESTION 4** If possible please report what proportion of women came to the clinic before the middle of pregnancy and how many after.

One hundred and forty-two clinics report on this question. The results are given in table 2.

TABLE 1—*Syphilis Rates Among White and Negro Patients*

|          | Per Cent Positive |       |
|----------|-------------------|-------|
|          | White             | Negro |
| 1 clinic | 4.0               | 10.0  |
| 1 clinic | 0.0               | 0.5   |
| 1 clinic | 3.0               | 7.0   |
| 1 clinic | 2.9               | 13.8  |
| 1 clinic | 1.4               | 6.3   |
| 1 clinic | 2.0               | 8.2   |
| 1 clinic | 2.2               | 13.0  |
| 1 clinic | 4.0               | 6.0   |
| 1 clinic | 2.4               | 10.0  |
| 1 clinic | 1.2               | 7.0   |
| 1 clinic | 1.5               | 2.7   |
| 1 clinic | 2.7               | 14.0  |
| 1 clinic | 0.9               | 11.0  |
| 1 clinic | 1.0               | 11.0  |
| 1 clinic | 4.0               | 21.8  |
| 1 clinic | 0.3               | 3.5   |
| 1 clinic | 1.0               | 10.0  |
| 1 clinic | 1.0               | 2.0   |
| 1 clinic | 1.3               | 7.0   |
| 1 clinic | 3.6               | 17.0  |
| 1 clinic | 4.0               | 11.4  |
| 1 clinic | 2.6               | 23.0  |

This question is important in view of the urgency that syphilitic pregnant women come under treatment not later than the middle of the period of pregnancy. It is encouraging to note that, of the 142 clinics reporting on this question, sixty-two or 44 per cent, are able to report that 50 per cent or more of the patients register by the middle of pregnancy. At the same time it shows how far we still are from our ultimate goal in this matter. It calls for more and more persistent education of the general public, especially the women to secure their needed cooperation in this aspect of public health.

**QUESTION 5** Are syphilitic pregnant women treated for the disease in antepartum clinic? If not, where?

Of the 176 clinics that answer this question only nineteen state that treatment is given in the antepartum clinic. The most frequently mentioned sources of treatment are the syphilis clinic, venereal disease clinic, genito urinary clinic, dermatology clinic and medical clinic.

While this situation is doubtless to be expected in large measure it is important to point out the great need of thorough cooperation and coordination of the service of the antepartum clinic and the sources to which patients are referred for treatment. Various studies have shown the very serious confusion, loss of precious time and failure to get patients under treatment at all because of inadequacy or breakdown in these interrelated services. Unquestionably the most effective plan is to give treatment for syphilis in pregnant women in the antepartum clinic which they attend.

**QUESTION 6** If you can give data as to the percentage of cases in which treatment of the woman proved protective for the child based on a given period of observation and serologic tests it will be of great value.

The questionnaire returns as a whole and the answers to this last question in particular reveal an astonishing lack of system and thoroughness in the recording of data and in studying and analyzing the results of treatment. In a very large proportion of the clinics no racial distinction in the records is made, no records of the percentage of cases positive for syphilis, no accurate data as to the period of pregnancy in which patients

come to the clinic and none as to when treatment was begun and no record of results of treatment in terms of follow up of the children born.

In the matter of following cases with observation and serologic tests for a reasonable period particularly this study shows urgent need of improvement. For the most part one might assume from the answers to this question that no concern for the child is manifested beyond birth or a few weeks after birth. Of the 268 clinics, only twenty-one hazard any answer to the question at all and many of these obviously are only guesses. Only three clinics indicate results based on a stated plan and period of follow up of infants. The answers of the twenty-one clinics to this question were as follows:

1. Ninety-nine per cent negative reactions.
  2. Ninety-nine per cent protected for six months.
  3. Negative Wassermann reactions in 95 per cent.
  4. All negative babies.
  5. In fully treated cases 100 per cent are protected. We follow up every three months. Based on results of a year's survey in 1930, cases being considered "treated" if the mother had had any antisyphilitic treatment at all no matter how inadequate, we have the following results: Good (normal baby at 2 weeks) treated, 88 per cent; untreated, 48 per cent. Bad (premature, stillbirth, neonatal death, stigmas) treated, 12 per cent; untreated, 52 per cent.
  6. One hundred per cent in five cases.
  7. One hundred per cent in two cases.
  8. One hundred per cent in two cases followed six months.
  9. Ninety-eight per cent of those who took regular treatment.
  - 10 and 11. One hundred per cent normal children at birth.
  12. Twenty-one cases followed with blood tests for eleven months. Twenty-five out of twenty-six negative and completely healthy.
  13. All but one in 124 cases.
  14. Treatment begun up to three months, 95 per cent protected. Treatment begun from three to six months, 70 per cent protected. Treatment begun from six to nine months, 40 per cent protected.
  15. One hundred per cent in those treated early.
  16. One hundred per cent in two cases.
  17. One hundred per cent in first half of pregnancy.
  18. About 100 per cent.
  19. In 1934 87.5 per cent of babies were Wassermann negative.
  20. One hundred per cent before five months.
  21. Ninety-five per cent of those treated before six months.
- On the whole this study indicates encouraging progress toward the prevention of congenital syphilis through the routine

TABLE 2—*Registration Before the Middle of Pregnancy*

| Percentage of Patient  | Number of Clinic |
|------------------------|------------------|
| Less than 20 per cent  | 11               |
| From 20 to 29 per cent | 16               |
| From 30 to 39 per cent | 21               |
| From 40 to 49 per cent | 24               |
| From 50 to 59 per cent | 20               |
| From 60 to 69 per cent | 17               |
| Over 70 per cent       | 17               |
| Total                  | 141              |

use of the serologic test of pregnant women. It emphasizes the need of more persistent effort to secure early diagnosis and early treatment. It indicates also the urgent need of more adequate record keeping and particularly of longer and more thorough follow up of children born of syphilitic women and scientific analysis of the results of treatment in the light of extended observation and tests.

#### SEROLOGIC TESTS IN PRIVATE OBSTETRIC PRACTICE

A questionnaire was sent to 250 private physicians supposedly engaged in obstetric practice being either members of the American Association of Obstetricians Gynecologists and Abdominal Surgeons or of the New England Obstetrical and

Gynecological Society Eighty-two replies suitable for analysis were received. A considerable number more replied that they are not now engaged in the practice of obstetrics. The questions and a summary of the replies were as follows:

**QUESTION 1** Do you now or have you ever for a considerable period made blood tests for syphilis as a routine on all pregnant women in your care as private cases?

Forty-two, or 51 per cent, answered "yes." Forty, or 49 per cent, answered "no."

This is a much more favorable showing than our general impressions had led us to anticipate. It is encouraging not only in that at this time more than half of the physicians reporting are making the use of the blood test a routine practice but also in that the practice in most cases has been adhered to for a considerable period of years, ranging from one to seventeen years, the average being eight and one half years.

**QUESTION 2** If so, what percentage of positive diagnoses has been made?

The thirty-seven replies to this question range from 0.0 to 3.5 per cent (table 3).

Three additional physicians reply respectively "one case," "one in sixteen cases," and "one this year."

It is seen that in one group of seventeen physicians the positive cases range from 0 to 0.6 per cent, and among another

TABLE 3—Positive Diagnoses

|               | Per Cent |
|---------------|----------|
| 5 physicians  | 0.0      |
| 2 physicians  | 0.01     |
| 1 physician   | 0.05     |
| 1 physician   | 0.1      |
| 1 physician   | 0.25     |
| 1 physician   | 0.4      |
| 3 physicians  | 0.5      |
| 3 physicians  | 0.6      |
| 13 physicians | 1.0      |
| 2 physicians  | 2.0      |
| 1 physician   | 2.4      |
| 3 physicians  | 3.0      |
| 1 physician   | 3.5      |

group of twenty physicians, more than half of the total, the positive cases range from 1 to 3.5 per cent. Surely this reported range of the prevalence of syphilis in private obstetric practice abundantly justifies and suggests the urgency of the routine use of the serologic test. This receives support from the fact that for the most part the physicians who report the low percentage of positives are just as emphatic as to the importance of the routine test as are those who report the higher percentage. One physician has made the blood test as a routine procedure for twelve years, although in nine years and 197 cases he has had no positives. Another physician has made the blood test as a routine since 1925, although in the 450 cases cared for he has had no positives. One physician has made the blood test as a routine for five years, although in 1,000 cases he has had only one positive. This is in line with a statement by Moore of Johns Hopkins, granting that in private practice one may have to make 200 tests to get one positive but insisting that if the rate were 1 in 1,000 it would be abundantly worth while. One physician has made the test as a routine for fifteen years, during which in 4,955 cases he has had 0.6 per cent positive.

**QUESTION 3** Do you consider it generally feasible to make blood tests as a routine in private obstetric practice? If not, why not?

Fifty-five physicians answered "yes," twenty one answered "no," six made a qualifying comment. It is significant that the great majority of these obstetricians regard the routine blood test in private practice as feasible, including sixteen physicians who are not as yet doing so.

The following are samples of the affirmative replies made:

1 "Yes, not only feasible but imperative."

2 "Absolutely, yes."

3 "Yes, if the health department will make tests without charge and patients are educated as to the value of prenatal care."

4 "Yes, the patients rather welcome the report. Only one has objected in 1,000 cases."

5 "Yes, there is no objection on the part of my patients."

6 "Yes, there is as a rule very little objection."

7 "Yes, and I should say of great value, and there is very little trouble or expense attached to the examination, as the health department does the work."

8 "Yes, absolutely. No explanation is made except that I wish to take some blood for examination."

9 "Yes, not only feasible but patients expect and often demand it."

10 "Yes, no trouble at all. I make several different tests on the blood and do not mention the type of test I am doing."

The following are samples of negative replies made:

1 "No, because of lack of proper education on this point, less than 50 per cent of private patients will submit to a Wassermann test."

2 "No, because of lack of laboratory facilities and extra cost to patients" (Pittsburgh).

3 "No, because intelligent people of this type do not marry if conscious of an infection" (Comment: Half the people who have syphilis do not know that they have it).

4 "No, because of type of patients under my care and low incidence of syphilis in the community."

5 "No, because of expense."

6 "No, expense of maintaining laboratory. It requires a full-time technician. Tests done in outside laboratories are too expensive for the average patients and it is too much trouble to transfer specimens to the city laboratory."

7 "No, patients object to added expense."

8 "No, some patients resent being investigated for lues."

9 "No, the patients will object and feel that suspicion is being cast upon their character."

10 "No, at the present time it is not feasible to do this in Boston" (Other Boston physicians do find it feasible in practice.)

It seems obvious that the frequently recurring objections on the ground of added expense have little or no sound basis, as free serologic service by city or state health departments is available in almost all cities and states.

It seems too that hesitancy to make the blood test on the ground that patients will object is based on fearful surmise rather than on actual experience with the practice. In this study not a single instance is stated in which a physician undertook to make blood tests as a routine and was obliged to give it up because the patients objected. As is indicated by some of the doctors, blood examinations are made for a variety of purposes and the exact reason for taking blood is not always, and need not be, made known to the patient.

**QUESTION 4** If it is possible to give the number of cases involved in your data, it will be helpful.

Twenty-four of the doctors report the number of patients involved in their report. The numbers range from 50 to 4,955. The average number per physician is 1,271. The numbers are sufficiently large to render the reports distinctly significant.

This study seems to show an encouraging trend with reference to the role of the private physician in the prevention of congenital syphilis. It is to be noted, however, that considerable reluctance to employ the routine use of the blood test on pregnant women still exists among private practitioners. In view of the strategic position of the private physician in this aspect of syphilis control it is to be hoped that the practice and experience of the majority of the physicians here reporting will encourage many more hesitating ones to adopt the rule "a blood test early for every pregnant woman."

50 West Fiftieth Street.



## Book Notices

**Manson's Tropical Diseases** A Manual of the Diseases of Warm Climates. Edited by Philip H. Manson-Bahr, D.S.O., M.A., M.D. Physician to the Hospital for Tropical Diseases, London. Tenth edition. Fabrikoid. Price \$11. Pp. 1003 with 462 illustrations. Baltimore: William Wood & Company, 1936.

It is difficult to cover the field of tropical diseases in a book in manual form. Many of these diseases are of world-wide importance and a rather complete discussion of them is necessary. Yet in this edition the author has kept the volume within reasonable bounds and retained its handy and practical character. Many advances have been made in the six years that has elapsed since the previous edition, and perhaps the most important of them have been in the department of virus diseases. The research on yellow fever alone in the last few years has reaped a harvest of knowledge, some of which has led to identification of other diseases. In fact, the designation "tropical diseases" today is scarcely correct, since many of them have recently been found prevalent in temperate climates. The author has concentrated his attention in this edition on the clinical aspects of disease in the tropics and has made a special feature of the detailed instruction in treatment. He has been led, therefore, inevitably to a revision of the classification of tropical diseases on a more natural basis. He has deleted much nonessential scientific matter in zoology, as that information has become readily available in specialized works. This edition is profusely illustrated with colored drawings and other illustrations. It has tables to aid in the differential diagnosis, for example, between bacillary and amebic dysentery, and between sunstroke and heat exhaustion and heat hyperpyrexia. The influence of the discovery of the vitamins on some of the tropical diseases is shown in about fifty pages devoted to the subject. It is a little disconcerting in the chapter on heat stroke and sun stroke to find the ingestion of salt mentioned in the treatment of heat stroke without any mention of the notable confirmation of that fact in the care of the laborers during the construction of Hoover Dam. The newer drugs for the treatment of amebic dysentery are reviewed. The etiology of sprue is said to be still obscure. The Monilia theory having been abandoned. The author claims the credit for discovering that infection with Monilia psilosis, named by Ashford, was in fact only a terminal infection. This edition undoubtedly will maintain the high position which this book has long held as a standard textbook on tropical diseases.

**La neurosis obsesiva. El sado masoquismo en el pensamiento obsesivo y en la evolución sexual.** Por el Dr. Jorge Thenon, médico del Hosp. Dawson de Buenos Aires. Paper. Price \$10. Pp. 405. Buenos Aires: El Ateneo. Librería científica y literaria, 1935.

This is a large work and is psychoanalytic in its tendencies although there are a number of places particularly in the general consideration of the subject where the author shows a familiarity with other types of psychopathologic theory. The book is divided into four parts: the first dealing particularly with the obsessive psychoneuroses. The author classifies them (not according to American conventions) and discusses the mechanisms involved in them with particular reference to other psychoneurotic entities. The second part deals with obsessive thought, and this is a highly psychoanalytic discussion of such features as the verbal formulation of images, numerical ideas, basic development of psychoanalytic thought, ideas of persecution, and many other types of thinking which must be looked into for an understanding of this type of mental disorder. The third part treats of the influence of sadomasochistic complexes on the obsessive psychoneurosis. In some of Freud's recent works comments are made about this relationship but they had not been fully discussed until Thenon took the matter up in the present book. The last part treats of the genesis of the sadomasochistic reactions and this part like the others covers a vast amount of ground. While this book is highly theoretical and contains almost no case history material it stands out as a substantial contribution to psychoanalytic theory. Although its point of view is slightly different from that held by most Anglo-American psychoanalytic investigators its formulations are helpful in developing new concepts of the sadomasochistic and obsessive neurotic mechanism. Discussing material that has

needed amplification. It probably is too technical for the casual medical reader. It contains a number of statements that will be criticized by the organically minded psychiatrist and there are even some ideas that will be disagreed with and criticized by conventional Freudians. It does present a point of view that cannot lightly be passed over by those interested in the psychopathology of the psychoneuroses.

**A Textbook of Bacteriology.** By Thurman B. Rice, A.M., M.D., Professor of Bacteriology and Public Health at the Indiana University School of Medicine. Cloth. Price \$5. Pp. 531 with 121 illustrations. Philadelphia & London: W. B. Saunders Company, 1935.

The author has endeavored to provide a shorter textbook of bacteriology that includes the real fundamentals necessary for the study of bacteriology. In his book he has shortened the description of cultural characteristics as well as the detailed instructions for laboratory technique and has largely omitted theoretical discussions of controversial subjects in favor of the more practical phases of the subject. The physician as well as the student will find, however, practically everything that may be needed for the treatment and control of diseases due to bacteria. The technical processes described here are those which may be done by the busy practicing physician who has limited time and equipment. The subject matter is unusually well presented in a clear and pointed style, and the numerous drawings are equally clear and instructive. As previously indicated this book is smaller than the usual textbook of bacteriology, and it should prove attractive to medical practitioners and also to medical students.

**Sanity First. The Art of Sensible Living.** By Joseph Jastrow. Cloth. Price \$2.50. Pp. 312. New York: Greenberg, 1935.

The author of this volume is well known for previous "inspirational" texts. He is a conservative, elderly psychologist who has taught this subject to college students for many years. He can be said to have his feet well on the ground but not to be unduly impressed by such new and apparently significant techniques as psychoanalysis and individual psychology, although he does discuss them. The present volume consists of five chapters, on (1) accepting our endowments, (2) employing our resources, (3) regulating our beliefs, (4) handling our liabilities and (5) patterning our expressions. Under each of these are a half dozen or more brief discussions of various psychological topics described in such a fashion that it seems to be the answer to an implied question. In the course of the volume it seems that everything of popular interest in psychology is superficially covered: types of personalities, emotions, psychology quackery of various sorts, the lie detector, primitive tendencies and other topics of interest to the general reader. The volume is light, is interesting and takes almost no time to read. The implied purpose that it is to serve, of aiding a person to maintain his sanity would probably be nil. As a scientific text for a physician it would seem to have little value for the same material is presented more thoroughly and practically elsewhere. Nevertheless, it might be predicted that the book will have a good sale, for there are thousands of psychoneurotic and other maladjusted persons who feel that they will be able to adjust their personality by the reading of inspirational books. It is certain that the information conveyed in this book is sufficiently accurate and handled so well that it will do no harm and the occasional neurotic who can benefit by such a book may do as well with this volume as with any of the others of similar ilk.

**An Introduction to Public Health.** By Harry S. Mustard, M.H.A., Associate Professor, Public Health Administration, The Johns Hopkins University. Cloth. Price \$2.50. Pp. 250. New York: Macmillan Company, 1937.

The author here presents a brief and for the most part a dispassionate survey of the situation as it exists in the field of public health. He presents the conflicting views of individualism on the one hand and the doctrine that government ought to be doing more and more for the health of the individual with what appears to be a real attempt at fairness. Yet one reads between the lines throughout and sometimes in the lines his conviction that government not only must go further in providing for the protection of the public health than it has yet gone but in order to do so must provide medical care for certain

elements of the population through public health agencies. He discusses the question of medical care as a function of the public health, when as a matter of fact any broad conception of medicine must contemplate public health as a function of medical care. His chapter on medical care is based almost wholly on the studies made by the Committee on the Costs of Medical Care. Either he chooses to ignore the studies in this field made by the Bureau of Medical Economics of the American Medical Association, which argues bias, or he has not heard of them which argues inadequate familiarity with his field. His bibliography on medical care does not mention studies made by the American Medical Association. He refers to state medicine as the 'whipping boy' of the official medical leaders in the United States and apparently chooses to ignore the fact that medical leaders are guided by the official policies enacted by the House of Delegates of the American Medical Association, a democratic representative body. At a time when public health leaders and medical leaders alike are looking toward harmonious cooperation between the practicing physician and the public health official, this chapter, conspicuously placed in the book as chapter I, is particularly unfortunate, not to say destructive. It spoils what would otherwise be a serviceable, though by no means an outstanding, manual on public health in the United States.

**Appareil circulatoire** Par Ch. Laubry, médecin de l'Hôpital Broussais. Collection des Initiations médicales publiée sous la direction du Dr A. Sézary. Paper. Price 22 francs. Pp 186 with 32 illustrations. Paris: Masson & Cie 1935.

This small textbook on the circulatory system is one volume of a series of medical subjects written for French medical students. The author is one of the leading cardiologists of France and a prolific contributor to current cardiac literature. The book is divided into three parts, with eleven chapters and a brief index. The first part covers subjective and objective cardiovascular diagnosis. The second portion is a description of the various types of heart disease. The third portion is concerned with the subject of ventricular failure. The chapters on cardiac x-ray and electrocardiography are well written and clearly illustrated with diagrams and photographs. The author's discussion of syphilitic myocarditis is typical of the French school and contrary to the American view that it is of infrequent occurrence. His views on hypertension, rheumatic valvular disease and coronary disease are the same as those current on this continent. One exception is the statement that coronary thrombosis is often of syphilitic etiology. In the chapter on cardiac failure, he ranks digitalis as the drug of first choice and mentions theobromine, ouabain and strophanthus. Mercurial diuretics do not appear to have found his favor. The book is of value to the American reader for a brief and concise analysis of the current French view of cardiovascular disease.

**Electrotherapy and Light Therapy** By Richard Kovács, M.D., Clinical Professor and Director of Physical Therapy, Polyclinic Medical School and Hospital, New York. Second edition. Cloth. Price \$7.50. Pp 696 with 264 illustrations. Philadelphia: Lea & Febiger 1935.

New information has been added to the original volume, and many revisions have been made. The book is divided into four sections. Part I deals with the fundamentals of electricity, and the chapters are written in a style that should appeal to the busy physician who has not had opportunity to keep abreast of the advances in applied physics. Part II is on general electrotherapy and electrodiagnosis. These chapters contain information on galvanic and faradic currents, on their indications in therapeutics, and on what might be expected in short wave diathermy. Writing on the last named field the author is conservative in his statements. Part III concerns light therapy, with chapters devoted to infra-red, luminous and ultraviolet radiant energy. Part IV deals with applied electrotherapy and light therapy. There are chapters devoted to surgical diathermy, gynecology and genito-urinary and proctologic conditions. The author calls attention to contraindications, as well as indications of the various therapeutic methods that are taken up. A chapter on dermatologic conditions has been prepared by Dr. Joseph Jordan Eller and a chapter on diseases of the ear, nose and throat by Dr. Wallace Morrison. One section has to do with static machines and methods. Little evidence of a

critical nature has been put forth to substantiate this method of treatment. Although the book discusses, for the most part, the therapeutic uses of apparatus, the author is judicious in mentioning that it is by no means necessary to possess a large array of machinery to produce a few basic physiologic effects. He has evidently paid close attention to the reports of the Council on Physical Therapy, since here and there he makes mention of Council material. The book may be recommended as one of the leading contributions to physical therapy, and those physicians who wish to obtain information in a concise form should find the volume valuable in their practice.

**Sammlung psychiatrischer und neurologischer Einzeldarstellungen** Herausgegeben von Prof. Dr. A. Bostroem und Prof. Dr. J. Lange. Band VII. Zur Genealogie psychopathischer Schwindler und Lügner. Von Dr. med. Walter von Baeyer. Paper. Price 16 marks. Pp 234. Leipzig: Georg Thieme 1935.

This volume of Bostroem and Lange's collection of research in neurologic and psychiatric subjects is a return to the older type of German research. For some reason a number of recent neuropsychiatric monographs from that country have not been as thoroughgoing as they used to be, but von Baeyer's study is a competent and capable review of a large number of criminal cases which he has studied. His material is obtained from the neuropsychiatric clinic at the University of Heidelberg and also the nervous and mental clinic at Munich. The material itself was not obtained by direct examination but rather by an analysis of case histories. There are studies of 125 cases. The author divides the various types of pathologic liars, thieves, swindlers and embezzlers into two groups, the first the pseudo-logical cheat and the second the other types of abnormal swindlers. In the first group forty-two cases are studied and in the second group twenty-five. A third section of the monograph is devoted to those cases of both groups which presented abnormal mood changes. The author analyzes and tabulates practically all possible social and psychiatric features in both the patients themselves and in their relatives. There are ten small tables showing various types of occupations of parents and various personality features in the siblings as well as their callings and there is much cross tabulation to show the significance of psychosis and major mental changes in the parents. Twenty-six pages are devoted to a table showing the sociological data of the first group and 123 pages are utilized in giving anamneses and other observations in the case histories of selected cases. Also in this part are given the case histories of the relatives of patients studied. The author concludes that knowledge of the complete family history of the parents is insufficient to enable one to prognosticate whether a person is going to be a pathologic liar or swindler. He implies but does not completely demonstrate that there is more relationship between the patient and his siblings. All together, the work is well done. While a great deal more basic facts are given than seems necessary, the study is thorough and interesting.

**The International Medical Annual. A Year Book of Treatment and Practitioner's Index.** Edited by H. Letheby, Tidy, M.A., M.D., F.R.C.P., and A. Rendle Short, M.D., B.S., B.Sc. Fifty Third Year 1935. Cloth. Price \$6. Pp 522 with 124 illustrations. Baltimore: William Wood & Company 1935.

This tells, year by year, the advances in medical science. The interest of the book depends on the medical work that is available for recording. An effort is made to include treatment that can be employed by the physician in general medical practice. The newer work in clinical pathology is summarized. The book is made up of a series of short articles by various medical contributors. The subjects are listed alphabetically. In addition a complete index is appended, which makes the finding of the material simple. There is material concerning industrial medicine, syphilis and infectious diseases. A full review on the subject of electrical injuries, migraine, carcinoma of the lung, serum treatment of pneumonia, thyroidectomy, heart disease, reducing and barbiturate poisoning are included. Material on surgery concerns the discussion of the diseases of the ear, nose, throat and eye, the surgery of childhood and general surgery in radiology and anesthetics. The busy practitioner finds in a book of this type a way of keeping himself informed in medical progress.

La castration chez l'homme et les modifications morphologiques qu'elle entraîne. Recherches sur les adeptes d'une secte d'ouvriers mystiques les Skoptzy. Par Eugène Pittard professeur d'anthropologie à l'Université de Genève. Papier. Prix 60 francs. Pp 329 with 70 illustrations. Paris: Masson & Cie 1934.

This volume is based on an extensive study of a large group of castrated males, belonging to a strange cult found chiefly in Rumania and known as the Skoptzy. The first portion of the book offers an interesting discussion of the historical and social aspects of castration. The remainder of the volume is devoted chiefly to comparative descriptions and measurements of the castrates. This work appears to be authoritative and complete from an anthropological standpoint. It offers little or nothing that is new to the endocrinologist.

## Bureau of Legal Medicine and Legislation

### MEDICOLEGAL ABSTRACTS

**Malpractice Liability of Physician for Malpractice by his Physician-Employee**—Dr Huckleberry, intending to be absent on his vacation, arranged for Dr Shinninger to spend a part of each day in Dr Huckleberry's offices and to take care of the work there. For this service he agreed to pay Dr Shinninger a stated sum per day. On Aug 25, 1933, the plaintiff fell in her home, and some glassware that she was carrying broke and cut a deep gash straight across her left leg below the knee cap. Dr Huckleberry was the plaintiff's family physician, so she was taken immediately to his office. There she found Dr Huckleberry absent and Dr Shinninger in charge, and she was treated by Dr Shinninger. Using Dr Huckleberry's equipment and assisted by his nurse Dr Shinninger washed the wound probed for glass and sewed up the surface wound without repairing or attempting to repair the possibly severed tendon below it. He made no x-ray examination and later it was alleged that he neglected to make tests to determine whether the patellar tendon lying directly beneath the wound had been severed. About ten days later, when he removed the sutures the plaintiff called his attention to the fact that she had no use of the injured leg and he told her that "it was all in her head" that she could and should use it and it would be all right.

Prior to the accident described, the plaintiff had on two occasions suffered "some cartilage trouble in her left knee" the most recent occasion having been some six or seven years before the accident. On these occasions the knee gave way under her, swelled up and disabled her for about two or three weeks. About six weeks after her accident of August 25 the plaintiff suffered a recurrence of her old knee trouble. She consulted a physician who, as soon as the swelling had sufficiently subsided, made an x-ray examination and discovered what appeared to be bone fragments below the knee cap. He thereupon referred her to an orthopedic surgeon. The orthopedic surgeon found that the patellar tendon had been severed and on Feb 7 1934 he operated. He repaired the damage and at the time of the trial the plaintiff showed considerable improvement although she was still on crutches. Dr Shinninger made no charge for his services to patients treated in Dr Huckleberry's offices or to any of Dr Huckleberry's patients. For all such services Dr Huckleberry rendered bills to the patients treated including the plaintiff and applied whatever money he collected to his own use and benefit. The plaintiff sued both Dr Huckleberry and Dr Shinninger for malpractice. The cause was tried without a jury. Findings of fact were made and judgment was rendered in favor of the plaintiff. The defendants thereupon appealed to the Supreme Court of Oregon.

All physicians who testified including the defendants themselves stated that if the patellar tendon was severed the most simple test would disclose it and that that test should be made regardless of what physician treated the case. They including the defendants admitted too that the exercise of the highest diligence on the part of a physician would disclose the nature and extent of such an injury and that a physician who failed

to apply recognized tests would be guilty of negligence. Dr Shinninger testified that he tested the condition of the plaintiff's knee joint by asking her to extend her knee that her cooperation was poor but that after a while she did extend the joint although not fully. Nevertheless said the Supreme Court, the testimony tended to show and the trial court found, that he did not use proper care and skill in the diagnosis of the plaintiff's condition and failed to use proper and well known tests to ascertain by requiring the plaintiff to extend her leg horizontally, whether the tendon was or was not severed from the knee cap. The Supreme Court could discover nothing to justify it in changing the finding of the trial court.

The defendants contended that even if there was malpractice on the part of the defendant Shinninger the defendant Huckleberry was not liable for it that there was no agency between them and that Dr Shinninger in treating the plaintiff was an independent contractor. Defendant Shinninger in his treatment of the plaintiff it was pointed out, was not directed by the defendant Huckleberry. But, said the Supreme Court defendant Huckleberry at all times had the right to control the actions of the defendant Shinninger or to terminate his employment. The Supreme Court quoted with approval from the opinion of the trial court:

The argument that the employed physician must be held to be an independent contractor because his employer could not direct the means and methods by which the former should perform an operation seems to me to prove too much. The same argument might be used with reference to the employer of a truck driver who sends him out to deliver a load of goods. The employer is in no position to direct the driving of the truck when an accident impends but the relation of master and servant and principal and agent is not for that reason impaired.

A physician who recommends or sends another physician to his patient said the Supreme Court, is not liable for injuries resulting from the want of skill or care on the part of the substitute physician, unless the substitute physician is in the employment of the physician who recommends or sends him or is definitely his agent or partner or unless the principal physician does not exercise due care in making the recommendation or substitution. But when one physician is employed by and is definitely the agent of another physician the employing physician is liable for the negligent treatment or malpractice of his employee. In the present case too, the defendant Huckleberry may be said to have ratified the treatment given by the defendant Shinninger by presenting for collection a bill claiming payment for the defendant Shinninger's services. The liability of the defendant Huckleberry was summed up by the Supreme Court as follows:

Taking into consideration all of the circumstances to which we have referred tending to show the relation of master and servant that is the mode of payment use of the master's premises materials equipment appliances and nurse the contract made between the parties the master's right to terminate the employment at any time Dr Huckleberry's right to direct how the work should be performed if he had been present or had the opportunity the fact that the servant or employee was not employed to do a specific piece of work but was employed generally to do all the work of the master and the other circumstances existing they constitute sufficient evidence that Dr Shinninger was the employee of Dr Huckleberry and that Dr Huckleberry was responsible for the conduct and improper treatment of plaintiff.

The Supreme Court expressed sympathy with Dr Huckleberry in his position as the defendant in a malpractice suit when he took no part in the treatment of the plaintiff except by contract but it nevertheless had to affirm the judgment of the trial court against both the defendants.—*Moulton - Huckleberry (Or.) 46 P (2d) 539*

**Workmen's Compensation Acts Mesenteric Hernia Attributed to a Fall**—On April 13 the claimant during the course of his employment stumbled and fell. He experienced a sharp pain in the region of his stomach and was nauseated. After a short rest the pain decreased in severity and he resumed his work but did not feel as well as usual. Two days later while hanging a bunch of bananas he again became nauseated. The abdominal pain recurred and progressed in severity until an operation was necessitated April 17 which disclosed a mesenteric hernia. A considerable portion of the intestine was distended and discolored to a foot of a inch had passed through a perforation or aperture in the mesentery. The intestine was removed from the aperture and the claimant made a normal

recovery. The industrial accident board denied a claim for compensation, on the ground that the hernia had existed to some degree prior to April 13 and did not result from an accidental injury. The district court reversed the board's order and directed an award in the claimant's favor. Thereupon the employer's surety appealed to the Supreme Court of Idaho, contending that a perforation or defect in the mesentery existed prior to April 13, that the defect in itself constituted a hernia and that, unless it was proved that the defect resulted from the accident, the claimant suffered no compensable injury even though the evidence conclusively showed that the protrusion of the intestine through the aperture resulted directly from the accident.

The testimony of the medical witnesses for the claimant and the surety was singularly in accord, the court said. The witness for the surety testified that the perforation in the mesentery was congenital or at least had existed for a long period of time prior to the accident. Witnesses for the claimant, while testifying that the perforation occurred at the time of the accident, also testified that the perforation may have existed for some time and that there was nothing to indicate how long it had existed. All witnesses agreed that the protrusion of the intestine through the perforation or defect in the mesentery was caused by the fall on April 13 and was further accelerated at the time the claimant lifted the bunch of bananas, April 15. From this testimony, the court said the correctness of the trial court's conclusion depended on the meaning of the word "hernia." After reviewing the authorities, the court declared a hernia to be a protrusion of some organ or tissue from its normal situation through an accidental or natural opening in the wall of the cavity in which it is contained and that the mere presence of a perforation or an aperture in the cavity wall either accidental or natural, and through which some organ or tissue may protrude at a later time, is not a hernia within the meaning of the workmen's compensation act of Idaho. The judgment of the trial court was therefore affirmed, and the cause remanded to that court with instructions to return the case to the industrial accident board directing it to enter an award in favor of the claimant.—*Stoddard v. Mason's Blue Link Stores (Idaho)* 45 P. (2d) 597.

**Malpractice: Sponge Left in Abdomen—Res Ipsa Loquitur.**—A cesarean section was performed on Mrs. Wallace at the defendant hospital by the physician-defendant, assisted by several nurse employees of the hospital. The patient lost a large amount of blood and it was necessary to operate very rapidly and to use a large number of laparotomy or surgical sponges. To each sponge was attached a tape of flat cloth about 12 inches long so that a ring or other object could be attached and left outside the surgical cavity to prevent the sponge from being lost. Apparently neither the physician nor the nurses made any sponge count before the surgical cavity was closed. Infection seemed to follow the operation and about five weeks later when another physician operated he found in the abdominal cavity a sponge with nothing attached to its tape. The plaintiff and her husband brought suit against the physician and the hospital. The trial court directed a verdict in favor of both defendants but later granted the plaintiffs a new trial. The physician and the hospital appealed to the district court of appeal third district, California, which affirmed the order for a new trial as to the physician but reversed it as to the hospital. 37 P. (2d) 467. THE JOURNAL, Sept. 28, 1935, p. 1068. The instant decision was apparently rendered by the district court on a rehearing.

The district court determined that the defendant hospital was a charitable institution that it had used due care in the selection of its nurses and hence was exempt from liability. It accordingly in part reversed the order of the trial court and gave judgment in favor of the hospital.

Apparently the trial court ordered a new trial as to the physician because it believed that it had erred in refusing an instruction, which in effect would have made the doctrine of *res ipsa loquitur* applicable to the facts. The physician, relying on the rule that where the plaintiff makes specific allegations of negligence he must rely on such specific allegations of negligence and cannot recover for any other negligent act, contended that the doctrine did not apply here because the plaintiffs had

alleged specific acts of negligence. But, said the district court of appeal, the plaintiffs alleged negligence on the part of the physician in that he, during the operation, negligently and carelessly deposited and left a sponge within the patient's abdomen and that he negligently and carelessly closed the incision without first removing the sponge. These allegations do not allege specific acts of negligence but at most merely charge that the physician negligently left a sponge in the abdomen of the plaintiff. No attempt was made to describe the negligence in detail or charge why or under what circumstances it occurred. The form of the allegations is not such as to prevent the application of the doctrine of *res ipsa loquitur*. The physician next contended that the doctrine was not applicable because it does not apply when two defendants are involved as here. In answer the district court of appeal cited *Godfrey v. Brown*, 220 Calif. 57, 29 P. (2d) 165, holding contrary to the physician's contention. Here, said the court, the patient was, during the operation, under an anesthetic, the physician was in charge, the sponge was not discovered until some five weeks thereafter, as to why it was left there or how it happened to be left, the patient has no information or means of information. Such facts were peculiarly within the knowledge of the physician. The court did not deem it necessary to determine whether or not the physician was responsible for the acts of the nurses because in the opinion of the court, it appears that a definite responsibility rests on an operating physician to know whether or not the sponges used in an operation are all accounted for. It is conceded that the physician did not count the sponges himself or require the nurses to do so. This seemed to the court to be an admission that he did not affirmatively satisfy himself as to whether or not all sponges were accounted for. He had the power and the duty to direct the nurses to count the sponges as part of his work in the opening and closing of the patient's abdomen, and the putting in and taking out of sponges. He cannot relieve himself of liability by any custom requiring the nurses to count the sponges used and removed. For these reasons the court concluded that it was erroneous for the trial court originally to refuse the instruction as to the applicability of the doctrine of *res ipsa loquitur*.

The physician further urged that what constitutes proper medical practice can be established only by expert testimony. With this general rule, the court answered, we have no complaint, but it does not require the testimony of expert witnesses to enable a court or jury to conclude that leaving a sponge 14 inches square in an abdominal cavity, on the completion of an operation, and permitting it to remain undiscovered for five weeks does not constitute good medical practice.

The court affirmed the order of the trial court granting a new trial as to the physician-defendant but ordered that a judgment be entered in favor of the defendant hospital.—*Armstrong v. Wallace (Calif.)*, 47 P. (2d) 740.

## Society Proceedings

### COMING MEETINGS

American College of Physicians, Detroit, Mar. 2-6. Mr. E. R. Loveland, 133 South 36th Street, Philadelphia, Executive Secretary.  
American College of Radiology, Chicago, Feb. 16. Dr. Benjamin H. Orndoff, 2561 North Clark Street, Chicago, Executive Secretary.  
American Orthopsychiatric Association, Cleveland, Feb. 20-22. Dr. George S. Stevenson, 50 West 50th Street, New York, Secretary.  
American Physiological Society, Washington, D. C., Mar. 25-28. Dr. A. C. Ivy, 303 East Chicago Avenue, Chicago, Secretary.  
American Society for Experimental Pathology, Washington, D. C., Mar. 25-28. Dr. Shields Warren, 195 Pilgrim Road, Boston, Secretary.  
American Society for Pharmacology and Experimental Therapeutics, Washington, D. C., Mar. 25-28. Dr. E. M. J. Geiling, 710 North Washington Street, Baltimore, Secretary.  
American Society of Biological Chemistry, Washington, D. C., Mar. 25-28. Dr. H. A. Matill, Chemistry Bldg., State University of Iowa, Iowa City, Secretary.  
Annual Congress on Medical Education, Medical Licensure and Hospitals, Chicago, Feb. 17-18. Dr. W. D. Cutter, 535 North Dearborn Street, Chicago, Secretary.  
Federation of American Societies for Experimental Biology, Washington, D. C., Mar. 25-28. Dr. E. M. J. Geiling, 710 North Washington Street, Baltimore, Secretary.  
Mid South Post Graduate Assembly, Memphis, Tenn., Feb. 11-14. Dr. A. F. Cooper, Goodwyn Institute Building, Memphis, Tenn., Secretary.  
Pacific Coast Surgical Association, Del Monte, Calif., Feb. 20-22. Dr. Edgar L. Gilcreest, 384 Post Street, San Francisco, Secretary.  
Southeastern Surgical Congress, New Orleans, March 9-11. Dr. Benjamin T. Beasley, 478 Peachtree Street, N.E., Atlanta, Ga., Secretary.

## Current Medical Literature

### AMERICAN

The Association library lends periodicals to Fellows of the Association and to individual subscribers to *THE JOURNAL* in continental United States and Canada for a period of three days. Periodicals are available from 1925 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied by stamps to cover postage (6 cents if one and 12 cents if two periodicals are requested). Periodicals published by the American Medical Association are not available for lending but may be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (\*) are abstracted below.

#### Alabama Medical Association Journal, Montgomery

5 205 240 (Dec.) 1935

Concept of Psychiatry F A Kay Tuscaloosa—p 205

Pneumonia and Empyema in Children W W Anderson Atlanta Ca—p 207

Mild Hypothyroidism Report of Cases R O Russell Birmingham—p 209

Clinical Importance of Low Blood Calcium Report of Cases J W Hoggess Jr Guntersville—p 212

#### American Journal of Diseases of Children, Chicago

50 1351 1642 (Dec.) 1935

Syndrome of Diffuse Muscular Hypertrophy in Infants Causing Athletic Appearance Its Connection with Congenital Myxedema R Debre and G Semelaigne, Paris France—p 1351

Polymyelitis II The Bulbar Type J A Toomey Cleveland—p 1362

Asthma in Children VII Influence of Specific and Nonspecific Treatment on Differential Leukocyte Count with Especial Reference to Eosinophils M M Peshkin New York, and W Messer Brooklyn—p 1374

Gastric Aspiration in Children with Pneumonia to Obtain Material for Pneumococcus Typing S A Wittes and J G M Bullowa New York—p 1404

Plotting of Graphic Record of Growth for Children Aged from One to Nineteen Years. Leona M Bayer and H Cray San Francisco—p 1408

Pathology of Steatorrhea A H Parmelee Chicago—p 1418

Maldevelopment and Maldescent of Testes II Further Observations on Treatment with Anterior Pituitary-like Gonadotropic Hormone C B Dorff Brooklyn—p 1429

Roentgen Positive Seronegative Infantile Congenital Syphilis N R Ingraham Jr Philadelphia—p 1444

**Diffuse Muscular Hypertrophy in Infants**—Debre and Semelaigne report two cases of intellectual backwardness, arrested growth, retarded development and general muscular hypertrophy (athletic aspect) in babies accompanied by muscular hypertonia in one. The condition of the second baby was transformed by thyroid treatment. They claim that congenital athyroidism may cause this clinical syndrome and offer the idea that the histories of the cases observed by de Lange and described under the title "Congenital Hypertrophy of the Muscles, Extrapyramidal Motor Disorders and Mental Deficiency" pertain to the same category of syndromes. They advise systematic thyroid treatment in such cases.

**Pathology of Steatorrhea**—Parmelee asserts that the term congenital steatorrhea has been used to describe a fairly definite clinical condition which differs from the usual picture of celiac disease in the following respects: 1. The onset is in the first weeks of life regardless of the type of feeding. 2. The stools contain an excessive amount of neutral fat as compared to the amounts of fatty acid and of soaps. 3. Free fat in the form of an oily substance often is passed with the feces in large amounts when such a food as butter cream or cod liver oil is fed. 4. The patient never overcomes this digestive abnormality. In the patients (two of his own and four reported in the literature) who have presented this clinical picture during life, necropsy has revealed a constant pathologic process, i.e., marked fibrosis and great diminution in the amount of secretory gland tissue in the pancreas and bronchiopneumonia in the lungs usually of a subacute type with purulent bronchitis and bronchiolitis and sometimes with numerous widely disseminated milium abscesses and changes in the alveolar walls indicative of chronic irritation. A possibility is that the lung tissue may be directly damaged by irritating substances, the products of abnormal digestion carried to it in the venous blood.

**Roentgen-Positive Seronegative Congenital Syphilis**—According to Ingraham from Jan 1 to Dec 31, 1934 at the Philadelphia General Hospital, not one of 1,517 babies discharged alive from the maternity ward showed any clinical evidence of congenital syphilis. The Wassermann reaction was of value in diagnosing syphilis in only nine syphilitic children among 195 offspring of syphilitic mothers. The roentgenogram disclosed forty additional cases, twenty-six (19.4 per cent) before the age of 6 days and twenty-three cases (17.1 per cent) at ages from 1 to 10 months. In all these cases the initial skeletal changes were evident roentgenographically before the blood serum gave a positive reaction. Treatment of the mother prior to delivery affects the early roentgenographic evidence as follows: Of fifty-one cases in which the mothers were treated more than two months, in five (9.8 per cent) syphilis was shown in the infants roentgenographically at 6 days, of sixty-eight cases in which the mothers were treated less than two months in twenty-one (30.8 per cent) there was positive roentgenographic evidence of syphilis in the offspring. Cases in which the roentgenograms revealed no positive signs at the age of 6 days were studied at ages from 3 to 6 months. Of thirty-six cases adequately followed in twelve (33.3 per cent) the roentgen evidence subsequently became positive. In three cases serial roentgenograms of the same children taken over a period of several months left no reasonable doubt that the earlier bone changes seen a few days after birth are the precursors of the more advanced and easily recognized bone lesions that developed subsequently. The Wassermann reaction which originally was negative, became positive as the disease progressed, making a syphilitic etiology seem certain.

#### American Journal of Public Health, New York

25 1285 1396 (Dec.) 1935

Public Health A Problem in Distribution W H Brown Palo Alto Calif—p 1285

Fifteen Years of the Committee on Administrative Practice I The Initial Steps L I Dublin New York—p 1296

Id II Evolution of the Program C E A Winslow New Haven Conn—p 1303

Id III The Point of View of a Health Officer J I Rice New York—p 1317

Development of Vital Statistics in the Bureau of the Census H I Dunn Washington D C—p 1321

National Aspects of Social Security Program as They Relate to the Children's Bureau Katharine F Lenroot Washington D C—p 1327

Present Status of the Vitamin B Complex C A Elvehjem Madison Wis—p 1334

\*Vitamin Content of Important Foods in the Child's Diet C R Feller Amherst Mass—p 1340

Some New Emphases in Public Health Nursing Alma C Haupt New York—p 1346

Immunologic Application of Placental Extracts F S Robinson and C F McKhann Boston—p 1353

Recent Experiences in Scarlet Fever Control J P Koehler Milwaukee—p 1359

**Vitamin Content of Foods in Child's Diet**—Fellers furnishes experimental proof that the modern choice of foods for infants and children from a vitamin point of view is well founded. Fresh pasteurized and canned evaporated milks contain from 20 to more than 27 U S P units of vitamin D per quart. Pasteurization and homogenization have no effect on the vitamin D potency of milk. Of the 245 samples of irradiated milk assayed only five were below the 135 unit level. One of the eight samples of metabolized (vest) milk and one of the four samples of fortified (Vites) milk contained less than 400 U S P units of vitamin D per quart. Canned evaporated irradiated milk contained at least 270 units per quart. Forty-three samples of fresh or manufactured fruit products were examined for their vitamin C content. In general fresh and canned citrus fruits, tomatoes and certain apple varieties (Paldwin, Northern Spy, Pen Davis and Winesap) as well as their juices are excellent antiscorbutics. Grapes, grape juice, peaches, cherries, prunes, pears and certain varieties of apples (Tolman, McIntosh, Delicious and Jonathan) are poor sources of vitamin C. Fresh and canned pineapple as well as pineapple juice are of moderate antiscorbutic value. While raw nonacid vegetables are usually good antiscorbutics, cooking and canning are very destructive to vitamin C. During a short cooking period peas, asparagus, lima beans and spinach lose from 40 to 80 per cent of their vitamin C. The loss in canning may vary from 60 to 90 per cent. Canned



frozen vegetables are slightly lower in vitamin C than fresh cooked but are considerably higher than the canned vegetable that has been heated for the table. Canned, sieved (pureed) vegetable baby foods have the same or lower vitamin C values than the unstrained canned vegetable. In spite of the destructive action of heat on vitamin C in vegetables, sufficient amounts are retained to be of distinct antiscorbutic value.

### Anatomical Record, Philadelphia

63 325-430 (Nov 25) 1935

- Growth Pattern and Daily Rhythm of Incisor of Rat I Schour and S R Steadman Chicago—p 325  
Birth Weight in the Gray Norway Rat and Factors That Influence It Helen Dean King Philadelphia—p 335  
Meniscus of Knee Joint in American Whites and Negroes C. M. Charles St. Louis—p 355  
Method for Preparation of Dried Human Lungs for Teaching and Museum Purposes G N Ronstrom New Orleans—p 365  
Morphology and Development of Metanephric Glomerulus in Pigeon R W Vilter Boston—p 371  
Effects of Estrin on Urogenital Tract of Male Monkey G Van Wagenen New Haven Conn—p 387  
Three Diverse Patterns of Arteria Brachialis Superficialis in Man A G Schwyzer and C F De Garis Baltimore—p 405  
\*Caudal Level of Termination of Spinal Cord in American Whites and American Negroes J H Needles St. Louis—p 417

**Caudal Level of Termination of Spinal Cord**—Needles observed the level of termination of the spinal cord in 240 adult cadavers, of these 107 were white Americans (ninety-one men and sixteen women) and 133 were American Negroes (105 men and twenty-eight women). The termination was determined by inspection of the lower portion of the spinal cord and was verified by microscopic study in six cases chosen at random. The spinal cords terminated below the middle of the intervertebral disk between the first and second lumbar vertebrae in 55 per cent, 45 per cent of the spinal cords ended above this level. Forty-nine per cent of the spinal cords terminated between the levels of the lower third of the first lumbar vertebra and the upper third of the second lumbar vertebra. The highest level of termination was the middle third of the twelfth thoracic vertebra. The lowest level of termination was the lower third of the third lumbar vertebra. Negro spinal cords terminated at a lower level in the vertebral canal than those of white persons. Female spinal cords terminated at a lower level than those of males.

### Archives of Ophthalmology, Chicago

14 879 1066 (Dec) 1935

- Some Ophthalmic Observations Based on Experience During the Past Fifty Years with Preface of Brief Historical References G E de Schweinitz Philadelphia—p 879  
Beginnings of Section of Ophthalmology of the New York Academy of Medicine Address at the Fiftieth Anniversary Exercises May 20 1935 P Fridenberg New York—p 890  
The New York Eye and Ear Infirmary Historical Sketch B Samuels New York—p 896  
The Brooklyn Eye and Ear Hospital 1868 1935 P C Jameson Brooklyn—p 903  
History of Herman Knapp Memorial Eye Hospital A Knapp New York—p 909  
History of Manhattan Eye Ear and Throat Hospital H W Wootton New York—p 914  
Histopathologic Characteristics of Nutritional Cataract in White Rat W M Dodge Jr Battle Creek Mich—p 922  
Use of Extract of Adrenal Cortex in Glaucoma A C Woods Baltimore—p 936  
Relation of Strabismus to Right or Left Sidedness W H Fink and B Bryngelson Minneapolis—p 947  
Paracentral Homonymous Hemianopic Scotoma O Barkan and S F Boyle San Francisco—p 957  
\*Cataracts Produced in Albino Rats on Ration Containing High Proportion of Lactose or Galactose A M Yudkin and Caroline H Arnold New Haven Conn—p 960  
Treatment of Sarcoma of Uveal Tract W G M Byers and J A MacMillan Montreal—p 967  
Technic of Orthoptic Training in Squint L C Peter Philadelphia—p 975

**Cataracts Produced in Albino Rats**—The ready production of lenticular opacities in the white rat by the inclusion in the diet of a particular type of carbohydrate and the uniformity of the results obtained suggested to Yudkin and Arnold a more complete study of the tolerance of ocular tissue to rations containing various amounts of corn starch dextrose, lactose and galactose. In the first group of rats the carbohydrate portion of the diet was 70 per cent dextrose, and in the second group 70 per cent of corn starch. The animals remained on this diet

for 140 days. No ocular disturbance was noted at any time during the experiment in either group. Fifteen young (21 days) albino rats were fed the basal diet containing 70 per cent lactose. Diarrhea developed at intervals, during which the eyes frequently showed a "milklike" foggy in the lens, but on ophthalmoscopic examination no lenticular changes could be detected. Even though the foggy in the lens seemed to be associated with severe diarrhea, the matured cataract developed in the animals that showed the least intestinal disturbance. The initial changes in the lens appeared in from seventy to ninety-four days, but matured cataracts developed in only seven animals in the span of 140 days. Eight animals fed a diet containing 50 per cent galactose maintained good health. When the rats had been on the diet for from eleven to fourteen days, the lens of each eye showed a cataract. The first visible signs of lenticular disturbance were manifested by a light pink eye and a "milk white" foggy in the lens. Ophthalmoscopic examination showed no opacities at this stage. The lens was tumescent. Subsequently a few striae were seen, and these were followed by a complete opacification of the nucleus of the lens. On continuation of the experiment for a few days, the whole lens became opaque. Four animals placed on a diet containing 35 per cent galactose likewise developed cataracts in from ten to fourteen days. A third group of four animals on a diet containing 25 per cent galactose also showed cataracts in from fourteen to twenty days. In all these animals the nucleus showed the opacity first. Four rats (female), two of them 68 days old and two 85 days old, were given a diet containing 50 per cent galactose. All showed white opacities in the lens in about twenty-one days. In contrast to the nuclear development in younger rats, the older animals had cortical cataracts. Two of the animals continued on the diet for five weeks, and definite matured cataracts developed.

### California and Western Medicine, San Francisco

43 393-464 (Dec) 1935

- Sylvatic Plague in California Discussion of Its Extent in Years 1934 and 1935 K F Meyer and B Eddie San Francisco—p 399  
\*Air Conditioning Its Relation to Upper Respiratory Infections. M N Hosmer San Francisco—p 405  
Polio myelitis In Vitro Neutralization Tests Using Normal Adult and Convalescent Human Serums I Introduction Beatrice F Howitt San Francisco—p 407  
Role of Urethra in Female Urology W E Stevens San Francisco—p 411  
Compression Fractures of Spine W A Morrison and R J Flammang Los Angeles—p 416  
Intestinal Obstruction Roentgen and Statistical Study J T Chapman, Pasadena—p 419  
Treatment of Varicose Ulcer and Veins J M Schmoeler Los Angeles—p 423  
Pigmentation of Metabolic Origin Its Relation to Autonomic Nervous System I Bancroft Los Angeles—p 425  
Results of Treatment of Congenital Luetic with Bismuth Arspenamine Sulfonate (Bismarsen) for Five Years W A Reilly San Francisco—p 429

**Air Conditioning**—Hosmer declares that air conditioning from a technical standpoint should still belong to the engineers, however, the profession should become more familiar with what is being done so that it may assist in the proper installations for various conditions. The results of various investigators show that each individual patient presents entirely different requirements for the conditions of the air to be supplied. For example, the nursery for the premature infant should be maintained at a relative humidity of from 60 to 65 per cent and a temperature of from 80 to 100 F, depending on the age and weight of the patient. The asthmatic patient responds much more quickly if the relative humidity is kept at 40 per cent. The patient who has a stuffy nose in an atmosphere of high relative humidity responds nicely to a humidity of from 48 to 50 per cent and a temperature of about 68 F. In the extremely dry climates of the Western states it will be necessary, at times, to add water to the circulated air to increase the humidity. Hospitals should be conditioned by the unit system so that individual rooms, or groups of rooms can be maintained at any desired state. They can accommodate, in this way, any type of patient who may require care. The author presents a brief outline of the subject of air conditioning as it has been developed by the leading ventilating engineers. Its value in the management of diseases of the upper respiratory tract has been shown by many investigators.

## Canadian Medical Association Journal, Montreal

33: 597 716 (Dec) 1935

- Genesis and Development of Brunn's Nests and Their Relation to Cystitis  
Cystica Cystitis Glandularis and Primary Adenocarcinoma of Bladder  
F S Patch and L J Rhea Montreal—p 597
- Mechanism of Rotation in Occipitoposterior Positions J Mann Toronto  
—p 607
- Cardiovascular Syphilis Necropsy Survey F E Cormia Montreal  
—p 613
- Inadequacy of Present Dietary Standards F F Tisdall Toronto  
—p 624
- Vinyl Ether Obstetric Anesthesia for General Practice W Bourne  
Montreal—p 629
- \*Investigation of Role of Anaerobic Streptococci in Infectious Diarrhea  
in Toronto Marion M Johnston and Mildred J Kaake, Toronto  
—p 632
- Calcium and Hemoglobin Influence of Cabbage Diet on Hemoglobin of  
Rabbit J Ferguson and A W Downs, Edmonton Alta—p 634
- Poisoning from Phenobarbital (Luminal) Report of Fatal Case and  
Review of Fatalities Previously Reported E P Scarlett and D S  
Macnab Calgary Alta—p 635
- Value of Speech Training in Cleft Palate and Other Mouth Conditions  
E E Scharfe Montreal—p 641
- Paroxysmal Neuralgia of Tympanic Branch of Glossopharyngeal Nerve  
Report of Case Relieved by Intracranial Section of Glossopharyngeal  
Nerve T C Erickson Montreal—p 647
- Twenty Years Experience with Artificial Pneumothorax Study of  
Four Hundred and Sixty Cases A F Miller C J W Beckwith,  
A. A. Giffin H R Corbett and A V Fraser Kentville N S—p 650

**Anaerobic Streptococci in Infectious Diarrhea**—During the autumn of 1934 Johnston and Kaake made an attempt to isolate a streptococcus comparable to the species described by Cooper (Streptococcus micro apolka-enteritidis) from cases of infectious diarrhea in infants. Cultures were taken from twenty-seven infants less than 2 years of age admitted to the Hospital for Sick Children. Streptococci were isolated from the noses and throats of fifteen, from the feces of two of these, and from the feces of four others whose nose and throat cultures yielded no streptococci. No strains comparable to that described by Cooper were obtained. The strains isolated from the feces were not similar to those isolated from the nose in the two cases in which strains were obtained from both sources. From the feces of sixteen of these infants definitely pathogenic strains of gram negative bacilli were isolated, from nine others, strains of less well established pathogenicity were cultured. The feces of only two yielded no suggestive species. No streptococci were isolated from these two. Eleven strains of Bacillus dysenteriae Sonne, three of Bacillus dysenteriae Hiss-Russell three of Bacillus dysenteriae Schmitz, two of Bacillus asiaticus three of Bacillus Morganii, two of Bacillus proteolyticus and thirteen unidentified strains were cultured. The significant species occurred alone or in mixtures of two or more sometimes associated with species of less well accepted pathogenicity. The six fecal streptococcus strains were grown in broth for eighteen hours. Then 25 cc. of each of these cultures was injected intravenously into young healthy rabbits the feces of which had yielded no streptococci similar to the strains about to be injected. No effect was produced on the animals.

**Poisoning from Phenobarbital**—Scarlett and Macnab state that even a cursory review of the literature indicates a steadily increasing number of toxic reactions to the barbituric acid derivatives. So prevalent have these reactions become that in some countries measures to control the prescribing of barbiturates are under consideration. Reports in the literature indicate an increasing incidence of skin eruptions from phenobarbital. The dosage in these cases has usually been 1½ grams (01 Gm) at bedtime has in no instance exceeded this dosage and in some instances has been less. The prevalence of these eruptions has been such that in the last six months the authors have felt obliged to discontinue the use of phenobarbital except in selected cases such as epilepsy. The indiscriminate use of the barbiturates is to be avoided. Special attention should be paid to the following points: 1. Senile patients require a smaller dose. 2. Debilitated patients tolerate the drug poorly. 3. Patients with arteriosclerosis hypertension or myocardial disease may react poorly to the shorter acting barbiturates because of the marked effect on the blood pressure and may complain of vertigo and ataxia. 4. Severe genito-urinary disease may be an absolute contraindication. 5. Defective liver function makes anything but small doses inadvisable and con-

tinuous administration is to be avoided. 6. Advanced pulmonary disease and, particularly, pulmonary congestion are contraindications to the use of the barbiturates before operation because of their action on the respiratory center. 7. Severe toxemia from sepsis increases the susceptibility to these drugs.

## Canadian Public Health Journal, Toronto

26 523 574 (Nov) 1935

- Cardiovascular Renal Conditions as Public Health Problem H C Cruikshank Toronto—p 523
- History and Activities of the National Health Division of the Department of Pensions and National Health J J Heagerty Ottawa Ont—p 528
- Parasitology and Its Relation to Public Health in Canada T W M Cameron St Anne de Bellevue Que—p 541
- The Medical Officer of Health and School Health in a Small Urban Municipality W H Birks Bowmanville Ont—p 548
- Mortality from Respiratory Diseases Excluding Tuberculosis (Ontario 1880-1931) Mary A Ross Toronto—p 552

## Colorado Medicine, Denver

32 953 1024 (Dec) 1935

- Oral Pathology in Relation to Systemic Disease T E Carmody and G W Smith Denver—p 964
- Nonoperative Care of Head Injuries P Work, Denver—p 968
- Surgical Management of Severe Head Injuries J E A Connell Denver—p 971
- Thyroid Crisis Report of Case Following Operation G F Aetherton Denver—p 975
- Frequency and Duration of Modern Football Injuries G K Cotton Denver—p 979

## Iowa State Medical Society Journal, Des Moines

25 635 710 (Dec) 1935

- Role of Psychotherapy in General Medicine A E Bennett Omaha—p 635
- The Heart and Athletics R S Grossman Marshalltown—p 638
- The Heart in Bronchial Asthma W D Paul Iowa City—p 643
- Heart Disease in Pregnancy R I Theisen Dubuque—p 648
- Reasons and Technique for Lobe Differential Count F H Lamb, Davenport—p 651
- Some New Factors in Diagnosis of Acute Appendicitis C N Cooper Waterloo—p 654
- Intra Urethral Prostatectomy R Weston Mason City—p 658
- \*The Management of Functional Constipation A A Schultz, Fort Dodge—p 661
- Acute Staphylococcal Kidney G V Caughlan, Council Bluffs—p 664
- Congenital Absence of One Kidney F H Entz Waterloo—p 668
- Adequate Records and General Office Management E F Hagen Decorah—p 671

**Management of Functional Constipation**—Schultz says that no case of constipation can be properly managed unless one ferrets out the various etiologic factors. Preventive treatment must begin in childhood and all children should be taught the proper intestinal hygiene, the dangers of neglecting nature's call, the importance of diet and the hazards of cathartics. A complete history is of great importance, including consideration of the personality habits of eating diet, water intake frequency and kind of cathartics exercise and rest. Organic disease of the intestine and constitutional disease must be eliminated as a cause. The stool should be carefully investigated in all cases. The treatment of the patient himself should begin with psychotherapy. All fixed ideas and fears that in themselves inhibit intestinal action must be eradicated and the absolute confidence of the patient obtained. The initial step in the treatment is to withdraw all cathartics and the first few days will be the trying period for the patient. The essentials in the treatment of functional colonic constipation are education, diet and regulation of habits. A definite routine must be established and followed day in and day out. The diet ordered will depend entirely on whether the intestine is hypertonic or atonic. It should produce sufficient residue to provide normal stimulation to peristalsis but not be so bulky and irritating as to cause colonic spasm. In treating the atonic intestine the main consideration is to increase the quantity of vegetable foods organic acids and sugar providing both chemical and mechanical stimulation. An increased amount of fat for the undernourished individual is valuable. Patients who have developed the spastic type of constipation must be put on a smooth diet with a relatively low residue and the vegetables ordered should preferably be peeled and raw fruits and vegetables interdicted. Stewed fruits are frequently well taken. These people require psychotherapy, nerve sedatives, tincture of belladonna or atropine, t-

allay spasm, and warm applications to the abdomen. They should forget their worries at meals, eat no large meals, take a light lunch between meals and avoid excessively hot or cold beverages. Exercise stimulates intestinal movements.

### Journal of Industrial Hygiene, Baltimore

17: 243 308 (Nov.) 1935

- Modification of Nielsen Method of Artificial Respiration C K Drinker and L A Shaw Boston—p 243  
Heat Cramps and Heat Prostration in Hot Industries P M Starkov and J V Jikesh, Sverdlovsk Ural U S S R—p 247  
Air Borne Infection and Sanitary Air Control W F Wells Boston and Cambridge Mass—p 253  
Hygienic Lighting Intensities M A Tinker Minneapolis—p 258  
Rock Wool in Relation to Health L T Fairhall S H Webster and G A Bennett Boston—p 263  
Lupus Carcinoma Report of Unusual Case of Carcinoma Following Injury and Implanted Lupus Vulgaris on Left Upper Extremity H Goodman New York—p 276  
Observations of Physical Efficiency in Ionized Air C P Yaglou Boston—p 280  
Effect of High Concentrations of Light Negative Atmospheric Ions on Growth and Activity of Albino Rat L P Herrington and K L Smith New Haven Conn—p 283  
Mineralogy of Asbestos Dust C S Hurlbut Jr Cambridge Mass and C R Williams Boston—p 289  
Pneumoconiosis in the Pittsburgh District Based on Study of Twenty Five Hundred Postmortem Examinations Made in Pittsburgh Hospitals Lucy Schnurer W C Allison C M Boucek and S R Haythorn Pittsburgh—p 294  
Technic for Skin Irritation Tests Technic for Determining Irritating Effects of Chemical Compounds J L Etchells and F W Fahian East Lansing Mich—p 298

### Michigan State M. Society Journal, Grand Rapids

34: 747 812 (Dec.) 1935

- Status of Essential Hypertension Problem S M White Minneapolis—p 747  
Serum Treatment of Lobar Pneumonia Report on Use of Felton's Serum in Detroit from Feb 25 to June 1 1935 A E Price Detroit—p 757  
The Art of Medical History Taking H C Saltzstein Detroit—p 762  
Diagnosis of Pituitary Disease Analysis of Twenty Cases A Farberman Detroit—p 767  
\*Immune Globulin Used as Preventive and Modifier of Measles G M Laning and T N Horan Detroit—p 772  
Osgood Schlatter's Disease Principles of Treatment with Review of Three Cases R D Fairchild Detroit—p 774  
Active Immunization of Children Against Acute Anterior Poliomyelitis with Kolmer's Vaccine H Roehm Birmingham—p 775  
Dinitrophenol Cataract Case History W Z Rundles Flint—p 777  
Cancer Survey of Michigan F L Rector, Evanston Ill—p 778

**Immune Globulin (Human) as Preventive of Measles**—Laning and Horan used immune globulin (human), an extract prepared from the placenta, in ninety-three cases. Immune globulin (human) can be given shortly after exposure to prevent measles and from seven to ten days after exposure to modify measles. Immune globulin (human) was used in nineteen cases to prevent measles. These included children who had recently been ill from infections of the respiratory tract, ear and lymph glands or to whom, for economic reasons, it was important that there should be no sickness in the family at the time. Doses of 2 cc (seven cases) and 10 cc (twelve cases) were given from one to four days after a known exposure. Twelve of these children did not develop measles in the remaining seven the course of the illness was light, with eruption, a degree of fever and a transient conjunctivitis and nasopharyngitis. There were no complications. Immune globulin (human) for modifying measles was given in 2 cc doses in seventy-four cases. Since a light case of measles will confer a permanent immunity on the child this procedure is the method of choice. The course of measles was light in sixty-eight cases and moderate in six cases with an intermittent fever of from 102 to 103 F for three days preceding and a continuous fever for three to four days after the appearance of the eruption. There were no severe cases and no complications among those who were given immune globulin (human). Of forty-six patients to whom no immune globulin (human) was given the course of the measles was light in nine, moderate in eleven and severe in twenty-six cases often beginning with a chill, a fever of from 104 to 105 F., a profuse eruption, severe conjunctivitis and swelling of the nasal mucous membrane, persistent cough difficult to control and sometimes toxic vomiting, headache and pain in the abdomen. Serious complications developed in fifteen of these cases. There were two deaths.

### New Jersey Medical Society Journal, Trenton

32: 683 744 (Dec.) 1935

- Infantile Glaucoma W G Mengel Camden—p 689  
Stuttering Nervous Maladjustment Not a Speech Defect J S Greece New York—p 693  
Intra Ocular Nonmagnetic Foreign Bodies with Especial Reference to Their Removal G H Cross Chester Pa—p 697  
The Essex County Medical Society J F Condon Newark—p 701  
The Union County Medical Society E S Krans Plainfield—p 704  
The Academy of Medicine and the Doctor A W Bingham East Orange—p 707

### New York State Journal of Medicine, New York

35: 1241 1296 (Dec. 15) 1935

- Genetics and Clinical Medicine G Draper New York—p 1241  
Treatment of Pneumonia A F Chase New York—p 1263  
\*Cutaneous Calcinosis M J Costello, New York—p 1266

**Cutaneous Calcinosis**—Costello treated a case of the metabolic form of cutaneous calcinosis over a period of six years. The patient also has multiple hereditary telangiectasis with recurring hemorrhage. Raynaud's phenomena, painful calcium nodules in the skin, a lipoma, arthritis, a high blood calcium when first observed, followed by a normal blood calcium later, and a leukopenia are the high lights of the study. Trauma, local nutritional disturbance caused by Raynaud's disease increased muscular activity and changes in the blood calcium, phosphorus and cholesterol are among the known factors influencing the deposition of calcium in the skin. The exact mechanism is imperfectly understood. The present case differs from the others reported in that the blood calcium was high in the beginning and gradually returned to normal. In the treatment of cutaneous calcinosis it is first necessary to make the patient as comfortable as possible by incising the skin over the painful nodules under local anesthesia. It is best to make an incision and then try to remove the nodule in its entirety. Not infrequently before this is possible, a creamy material is discharged and the calcium stone itself becomes fragmented on endeavor to remove it. The author has found it necessary to curet thoroughly the base, the surrounding skin and the sides of the wound to break up the calcium infiltration of the skin. The wound is allowed to drain without suture. It heals slowly, sluggishly discharging small granules of calcium. It is important to remove all the particles of calcium because, if any are allowed to remain, they will act as a 'catcher' for the further deposition of calcium salts, and the operation will have to be repeated. Large doses of x-rays, both filtered and unfiltered, had no effect in arresting the progress of a lesion or in curing it. A calcium plaque on the right knee of the patient, about 30 mm in diameter, became definitely softer with a tendency to break down after ten diathermy treatments. Salicylates given for arthritic pains gave moderate relief. Disodium phosphate had no effect on the lesions. There is a possible relationship between the arrest in the development of new nodules and the dietary suggestions, such as fat, salt and calcium poor diet. In the last ten years there have occurred on the face, neck, chest, extremities and mucous membranes of the lips a number of sparsely distributed, smooth, nonelevated, rectangular and oval patches of telangiectasia. They vary in size from a pin point to about 24 mm. The bony configuration is somewhat asymmetrical and there has been gradual thickening of the features.

### Oklahoma State Medical Assn. Journal, McAlester

28: 437 472 (Dec.) 1935

- Indications for Anesthetics Cyclopropane—New Gas Anesthetic—Report of One Hundred and Twenty Cases G S Meehling Oklahoma City—p 437  
Id Sodium Evipal J H Robinson Oklahoma City—p 439  
Id Nupercaine Infiltration Anesthesia F M Liengenfelder Oklahoma City—p 440  
Id Inhalation Anesthesia by Ether L Long Oklahoma City—p 440  
\*Some Observations on Treatment of Gonorrhea in the Male with Especial Reference to Corbus-Ferry Filtrate H M Spence Ponca City—p 442  
Points in Diagnosis of Cancer B B Coker Durant—p 447  
Eugenic Sterilization as Applied to Patients in Hospitals for Insane C T Steen Norman—p 450  
One Answer to State Medicine C Puckett Oklahoma City—p 457

**Corbus-Ferry Filtrate in Treatment of Gonorrhea.**—Spence studied the effect of Corbus-Ferry filtrate in fifteen cases of gonorrhea in the male. The method was used only for patients who could report regularly and frequently to the

clinic were cooperative in conduct and were really desirous of getting well. Every effort was made to adhere to the details of administration and dosage suggested by the manufacturers. He states that for all practical purposes the Corbus-Ferry filtrate has been unsatisfactory and decidedly inferior to the Pelouze treatment of gonorrhea in the male. Of many methods tried by him, the Pelouze treatment has consistently yielded the best results. In no type of therapy has he ever had so many complications (swelling of the entire penis and urethra with a phlebitis of the dorsal vein, acute prostatitis, acute epididymitis, hematuria, tenesmus, partial retention and rise in temperature) in so short a period of time as when using the filtrate.

### Pennsylvania Medical Journal, Harrisburg

39: 149-222 (Dec.) 1935

Prevention of Dental Caries and Improvement of Health by Dietary Means F F Tisdall Toronto—p 149  
Recent Trends in Medical Economics F F Borzell Philadelphia—p 152

Boarding Out of Mental Patients W C Sandy Harrisburg—p 155  
Phlyctenular Disease and Vitamin Deficiency L G Redding Scranton—p 158

Allergic Migraine L Tnft Philadelphia—p 162  
The State Department of Health and the Child Edith MacBride Dexter Harrisburg—p 166

Stricture of the Male Urethra J L Whitehill Beaver—p 170  
Diagnosis and Treatment of Pellagra G J Busman Pittsburgh—p 173

The Philadelphia Maternal Mortality Report Discussion of the Hospital Problems C B Lull Philadelphia—p 176  
Essential Considerations of Mental Deficiency A Laird Polk—p 179

**Phlyctenular Disease and Vitamin Deficiency**—Three years ago Redding observed that he was not seeing any cases of phlyctenular disease in his office or dispensary practice. This observation was confirmed by several colleagues. Consequently, statistics were gathered from the Wills Hospital, New York Eye and Ear Hospital, University of Pittsburgh and Massachusetts General Hospital which show a marked decrease in the last ten years, in the last few years there have been very few cases in any of these hospitals. With the nutritional cause in mind it seemed that the only possible factor that could affect the entire populace over such a wide area at about the same time was that of feeding. It followed that the particular change in feeding had been the use of the vitamins. This was brought about first by their discovery, then by the education of the physician, and through him the public. It was about this time that the almost universal use of cod liver oil and orange juice in the dietary of children was started. Finally there was a demand on the merchant for these articles and as a further result the increased use of refrigeration so that practically all vitamin-containing foods could be obtained cheaply the whole year round. In addition, canners were obliged to learn how to preserve the vitamin content of their products. Statistics received from the University of Vienna show an increase. This was to be expected because it is well known that Europe has not kept pace with America in the use of refrigeration or the year round use of vitamin containing foods. The clinical picture and the microscopic observations of phlyctenular disease in man and in rats fed on a diet free of vitamin A are similar. Since arriving at this concept of the disease the author has had the opportunity to treat only a few cases but in those that were treated quicker results were obtained by tablespoonful doses rather than by teaspoonful doses of cod liver oil.

### Philippine Islands Med Association Journal, Manila

15: 583-636 (Nov.) 1935

Heterophridiasis II Ova in Sclerotized Mitral Valves with Other Chronic Lesions in Myocardium C M Africa W de Leon and E Y Garcia Manila—p 583

New Phase in Medical Education F W Co-Tui New York—p 593  
Some Experiences in Treatment of Leprosy by Artificially Induced Fevers Preliminary Report B Nocht Hamburg Germany and F I Velasco Manila—p 602

Equipping Small Waterworks Laboratory P I de Jesu Manila—p 610

Human Clanders in the Philippines Additional Report M A Mallari and A I Mallari Manila—p 616

**Treatment of Leprosy by Induced Fevers**—Nocht and Velasco assert that prolonged, repeated artificially produced rises of temperature for a duration of from eight to ten hours and as high as 40 C. (104 F) and more are well tolerated

by leprosy patients and do not produce any dangerous or inconvenient by-effects or after-effects in leprosy of good general health. There is also no impairment of the general health. However, these attacks of raised temperature, even if repeated and prolonged are followed only in exceptional cases by marked improvement of the leprosy process. In most cases the process has been neither favorably nor unfavorably influenced by the attacks of fever. Therefore, in cases of marked improvement in or cure of leprosy by intercurrent infectious diseases, accompanied by fever, or of improvement or cure by a hot bath treatment of leprosy, the cooperation of another still unknown factor or a special condition or phase of the leprosy process should be suspected, the study of which might bring progress in the treatment of leprosy. The authors are continuing the treatment with pyrifur (sterilized suspension of a nonpathogenic bacillus of the coli group) in some selected clinical types of cutaneous leprosy and will report the results later.

### Philippine Journal of Science, Manila

58: 153-298 (Oct.) 1935 Partial Index

Antigenic Properties of Cholera Vaccine Prepared by the Philippine Bureau of Science K Sugino Manila—p 153

Philippine Ginger in Relation to the United States Food and Drugs Act J Marañon and Elena Caguila Manila—p 171

### Rhode Island Medical Journal, Providence

18: 179-192 (Dec.) 1935

Aputrid Pulmonary Necrosis Report of Case J Greenstein Providence—p 179

Our Deafened Children and How We Are Caring for Them C Berry Worcester Mass—p 182

### South Carolina Medical Assn Journal, Greenville

21: 227-258 (Dec.) 1935

Surgical Judgment in Our Approach to the Acute Abdomen L Gentry Columbia—p 227

Surgery in Roper Hospital R S Cathcart and J I Waring Charleston—p 231

Head Injuries Their Management and Treatment T Fay Philadelphia—p 233

Some Interesting Case Reports G P Neel Greenwood—p 243

### Southern Surgeon, Atlanta, Ga

4: 379-464 (Dec.) 1935

Congenital Anomalies of Gastro-Intestinal Tract Causing Obstruction J K Simpson Jacksonville Fla—p 379

Surgical Consideration of Tonsils and Adenoids W A Weldon, Glasgow Ky—p 393

Experiences with Well Leg Traction Apparatus J W White Greenville S C—p 396

\*Diagnosis and Treatment of Primary Carcinoma of Lung I A Bigger Richmond Va—p 401

Thyroid Disease in the Negro I Cohn New Orleans—p 416

Acute Appendicitis at the Extremes of Life Based on Analysis of Four Hundred and Twenty Six Cases in Children Under Twelve and Two Hundred and Twenty Four Cases in Adults Over Forty Years of Age U Maes and Elizabeth M McPetridge New Orleans—p 422

Gross Diagnosis of Mammary Cancer E I Bishop Atlanta Ga—p 438

Cancer of Lip and Intra Oral Mucous Membrane I W Frank Louisville Ky—p 444

**Primary Carcinoma of Lung**—Bigger states that the early diagnosis of carcinoma of the lung is difficult as there are no pathognomonic signs or symptoms but a cough productive of mucoid or blood tinged sputum that does not contain tubercle bacilli should be considered suggestive. Pain in the chest especially when associated with recurrent or persistent atelectasis is also significant. Patients presenting such symptoms should certainly be thoroughly investigated for only in this way will an appreciable percentage of cases of cancer of the lung be diagnosed before the disease has become hopelessly advanced. Since irradiation both by radium and x-rays has proved ineffectual patients diagnosed sufficiently early should be given the benefit of the doubt and an attempt made to excise the diseased lung tissue. To such cases treated surgically are reported. In the first it was necessary to do a total pneumonectomy in the presence of extensive pleural infection and this was followed by a suppurative pericarditis which eventually caused death. In the second case the entire local growth was removed by lobectomy but two enlarged hilar glands removed with the lobe showed small groups of metastatic carcinoma cells. No other suggestive glands were discovered and there has so far (one year) been no evidence of recurrence.

## FOREIGN

An asterisk (\*) before a title indicates that the article is abstracted below. Single case reports and trials of new drugs are usually omitted.

## British Journal of Physical Medicine, London

10 105 124 (Nov) 1935

- Modern Occupational Therapy for Tuberculous P. Varrier Jones — p 107  
 Treatment of Lupus Vulgaris with Artificial Light. J. E. M. Wigley — p 108  
 Light and Pulmonary Tuberculosis J. E. Wood — p 110  
 Present Position in Treatment of Tuberculous Joints H. J. Seddon — p 112

## British Medical Journal, London

2: 983 1030 (Nov 23) 1935

- Intracranial Tumor Diagnosis Prognosis and Treatment of Brain Tumor Fifty Years Ago and Today E. Bramwell — p 983  
 Treatment of Chronic Suppurative Otitis Media. L. G. Brown — p 986  
 \*Hypertensive Cerebral Attack D. McAlpine — p 990  
 Atypical Megalocytic Anemia G. D. Kersley — p 994  
 \*Contribution to Treatment of Burns A. C. Turner — p 995  
 Cutaneous Cancer in Cotton Mule Spinners Note E. D. Irvine — p 996

**Hypertensive Cerebral Attack.**—McAlpine asserts, after studying a number of cases that they were found to fall into one of two groups depending on the presence or absence of cerebral edema. Occasionally a case showed features appertaining to both groups. The term hypertensive cerebral attack has been selected to describe these symptoms. The factor common to the two varieties of cerebral attacks is a raised blood pressure. The actual precipitating cause seems to be a further rise in blood pressure. This rise may be only temporary. In the type of hypertensive cerebral attack without evidence of cerebral edema the sudden rise in blood pressure induces spasm of cerebral vessels with resulting ischemia. The symptoms that follow probably depend not only on the degree of spasm but also on the situation and number of vessels affected. The second factor that seems to predispose a hypertensive patient to convulsions is the previous occurrence of a cerebral thrombosis, by virtue of the local circulatory disturbance consequent on such a lesion. The type of patient under consideration is the victim of high blood pressure and diffuse hyperplastic sclerosis in whom the small arteries and arterioles in the body are widely affected. In the form accompanied by cerebral edema the immediate outlook is favorable provided steps are taken to combat the increased intracranial pressure. As long as the nitrogenous contents of the blood remain within normal limits, the immediate prognosis is good. As the essential factor in both forms of cerebral attack is believed to be a sudden additional rise in blood pressure accompanied by widespread vasoconstriction treatment should be directed toward a reduction in pressure by the speediest methods. Good results have been obtained by liberal venesection the use of French's apparatus is advocated. In the form of hypertensive cerebral attack with signs of cerebral edema, venesection will help toward a reduction in intracranial pressure. Intravenous injection of hypertonic sodium chloride solution will diminish headache. Lumbar puncture should also be carried out with the purpose of determining the extent to which intracranial pressure has risen, and as a therapeutic measure. If the cerebrospinal fluid is under moderately increased pressure (approximately 200 to 250 mm. of water) it is safe to remove from 10 to 20 cc. of fluid. If increased headache follows, no further lumbar puncture should be done. In the form of attack without signs of cerebral edema, lumbar puncture and intravenous hypertonic sodium chloride solution are valueless. Venesection is the most important measure. An inhalation of amyl nitrite may halt convulsions. In both forms an emema should be given at the first possible moment. The likelihood of further attacks may be lessened by the continuous use of vasodilators with a hypnotic such as phenobarbital.

**Treatment of Burns.**—Turner gives the following disadvantages of tannic acid treatment of burns. 1. The coagulum is coarse tough and not transparent. Any pus formation beneath it is difficult to diagnose. A very coarse type of granulation tissue will be found beneath the scab which is difficult to control and ultimately tends to produce extensive scarring. 2. Tannic acid is destructive to clothing and bed linen. This necessitates the use of rubber sheeting to protect the bed which

interferes with evaporation. 3. Tannic acid becomes unstable rapidly in the aqueous solution required for use. After a trial of several drugs the author selected mercurochrome because it does not precipitate protein and can therefore be said to be an effective antiseptic in the presence of protein, the crust formed is thin and transparent, bed linen is not destroyed, it is nonirritating to the tissues, a 2 per cent aqueous solution is stable for an indefinite period and epithelization under the scab takes place rapidly. The treatment of shock and exhaustion are dealt with on generally accepted lines. No general anesthetic is given. Large doses of morphine or other opiates are recommended and are usually quite effective. All dead tissue is stripped from the burnt area and foreign material is removed. The denuded area should be swabbed with absorbent cotton soaked in physiologic solution of sodium chloride at about 100 F until all debris has been removed. When the general toilet of the area has been completed, it is swabbed with a 2 per cent aqueous solution of mercurochrome. The surface is then dried with the assistance of an electric hair drier, an ordinary electric radiator or an electric cradle, provided it has ventilation holes along the top. Desiccation takes place rapidly. The first day four applications are recommended, the second day three and the third day two. The area is dried after each application and is always kept exposed to the atmosphere. The crust is likely to disintegrate. Therefore if the patient lies on a portion of the burned area he should be turned frequently and the freest ventilation possible should be provided. Should there be any local collection of pus, the crust should be freely removed from the area, the area swabbed with physiologic solution of sodium chloride as before and the mercurochrome treatment reapplied. Patients treated with mercurochrome have less general reaction during convalescence than those treated with other agents, while the amount of pain and discomfort compares well with that of any other method.

## East African Medical Journal, Nairobi

[12]: 227 260 (Nov) 1935

- Loose Stools with Particular Reference to Amebiasis. Part I. Method of Investigation and Bacillary Dysentery. H. C. Trowell — p 229  
 Human Case of Abortus Fever Due to Laboratory Infection. H. J. O. Burke-Gaffney — p 235  
 Evidence of Successful Destruction of Schistosomes. F. G. Cawston — p 244  
 Native Diet in Zanzibar. W. H. Smith and E. M. Smith — p 246

## Edinburgh Medical Journal

42 633 706 (Dec) 1935

- Histologic Study of Normal Mammary Gland in Relation to Tumor Growth. II. Mammary Gland in Pregnancy and Lactation. E. K. Dawson — p 633  
 Medicine in Early Greek Mythology. J. D. Gilruth — p 661

## Indian Medical Gazette, Calcutta

70: 601 660 (Nov) 1935

- Disorders of Digestion. Commoner Digestive Disorders of Children in India. E. H. V. Hodge — p 601  
 Tuberculosis of Mammary Gland. A. N. Goyle, K. G. Krishnaswamy and A. Vasudevan — p 609  
 Nasal Conditioning. J. R. Roberts — p 612  
 Difficulties in Bacteriologic Diagnosis of Cholera Vibrios. S. C. Seal — p 614  
 \*Use of Stramonium for Rigidity and Drowsiness Following Encephalitis Lethargica. H. Stott — p 620

**Stramonium for Drowsiness Following Encephalitis.**—Stott is of the opinion that the use of stramonium in post-encephalitic conditions, especially for parkinsonian rigidity and mental apathy, has not received the attention it deserves from the profession. With a daily dose of stramonium the patient's life may be rendered comparatively happy. With it he may be enabled to accomplish the fundamental necessities of life to walk, to dress and to feed himself, to write and even to earn his own living. Without it the patient may be compelled to drag out a crippled and sleepy existence with his daily wants falling as a burden on others. The stramonium must be given continuously in large doses, e. g., half a drachm (2 Gm.) of the tincture three times a day. At the West Park Mental Hospital, London, most of the postencephalitic parkinsonian patients are kept on substantial doses of stramonium tincture for many years. If stramonium is withheld it is found that the patients relapse rapidly to their former pitiable condition. Stramonium is in common and satisfactory use throughout the British mental and general hospitals.



## Presse Médicale, Paris

43 1793 1864 (Nov 16) 1935 Partial Index

- Tuberculous Virus Made Obvious by Acetone Extract of Tubercle Bacilli L. Nègre and J. Bretey—p 1798  
Tongue and Stomach P. Chevallier and F. Moutier—p 1801  
Tumor of Carotid Body P. L. Mirizzi—p 1804  
\*Black Tumors of Skin G. Roussy, R. Huguenin and N. Quoc Queyn. —p 1808  
Raynaud's Disease Predominating in Ear Lobules Cured by Specific Treatment G. Milian, A. Ravina and L. Perrin—p 1816  
\*Attempt at Antilepral Vaccinotherapy A. Sézary and G. Levy—p 1818  
Practical Interest of Anatomopathologic Classification of Nephritis H. Chabanier and C. Lobo-Onell—p 1825  
Mitral Lesions and Syphilis R. Lutembacher—p 1830  
Osteitis Fibrosa Deformans of Paget and Sarcoma P. Banzet, J. Delaure and A. Elbim—p 1842

"Black Tumors of Skin"—Roussy and his co-workers use the term black tumors of the skin because they consider it more accurate than melanoma. Tumors other than nevocarcinomas and melanosarcomas may be equally pigmented and equally malignant. The gross aspect sometimes indicates whether a tumor is melanotic or is a fibroma or angiofibroma with pigmented stroma. When this is impossible microscopic examination determines this fact definitely. The differentiation is especially important from the standpoint of prognosis. It is also significant for treatment. The authors have obtained good results in the treatment of black tumors of the skin with electrocoagulation.

**Antilepral Vaccinotherapy**—Although fully aware of the theoretical and practical difficulties in treating a chronic disease such as leprosy with a vaccine Sezarv and Levy report four cases observed by them. They used the microbic form found by Vandremere (which he considers a developmental stage) as their antilepral vaccine. The preparation was sterilized with iodine before being used. In these four cases and three others elsewhere reported the period of observation was long enough to form a provisional opinion of the action of the vaccine. The vaccine employed correctly is harmless and well tolerated. It has an undeniable action on certain manifestations of leprosy, but this action is sometimes lasting and sometimes only transitory. The vaccine has no effect on some of the other manifestations. The favorable action was noted in the painful edematous reactions of the face or limbs, in the phlegmonic element of some cutaneous infiltrations and in iritis (one case). The general condition (except in one instance) was also benefited. It seems that patients become rapidly accustomed to the vaccine and no advantage is hence derived from long series of injections. Thus ten or twelve injections seem to be optimal for each series. In the intervals between injections other preparations, especially chaulmoogra oil are indicated. The authors feel that the vaccine and chaulmoogra oil affect different manifestations of the disease and hence their association is advantageous.

## Clinica Ostetrica, Rome

371 705 768 (Dec) 1935

- Functional Tests of Respiration in Pregnancy V. Marzetti—p 705  
Unilateral Double Tubal Pregnancy Case in Nulliparous Woman O. Viana—p 717  
Hemoperitoneum Due to Spontaneous Rupture of Uterine Vein at Eighth Month of Pregnancy Case S. Roberto—p 724  
Combined Calcium and Quinine Treatment in Inflammatory Conditions of Internal Genitalia of Women E. Marchese—p 730

**Functional Tests of Respiration During Pregnancy**—Marzetti made tests for efficiency of respiration in twenty normal pregnant women during the last month of pregnancy and at the end of the first week of the puerperium. They included Rosenthal's resistance test for vital capacity, Monaldi's test of provoked hyperpnea, Flachs's test of sustained respiration, the test of voluntary apnea and Gallois's test of expiration of residual air. Rosenthal's resistance test consists in determining the vital capacity thirty times in ten minutes with intervals of a few seconds between determinations. In normal persons the figures for the vital capacity are the same or are increased by the test while in weak persons they decrease or show marked oscillations. Flachs's test consists in recording by graphic tracings the time during which a mercury column in a tube that is raised by an expiratory effort to a level of 20 mm. can be maintained at the same level by sustained

expiration. Gallois's test consists in determining the time it takes to count in a natural voice after a deep expiration. The results of the tests of Rosenthal and Monaldi indicated good functions of respiration in both conditions. Those of the tests of Flachs and Gallois as well as those of the voluntary apnea indicate a lower function of respiration during pregnancy than during the puerperium, but they are related to the special conditions of the nervous system during pregnancy. The author also determined the alveolar tension and the alkali reserve in ten women of the group in order to ascertain whether there is a tendency toward the development of acidosis during pregnancy. The average figures obtained for the alveolar tension and the alkali reserve were 464 and 50.1 per cent respectively, which he considers within normal limits. He concludes that there is no insufficiency of respiration during pregnancy.

## Semana Médica, Buenos Aires

42 1649 1756 (Dec 5) 1935 Partial Index

- \*Does a Period of Physiologic Sterility Exist in Women? R. Araya —p 1649  
Cyanosis Physiopathogenesis M. del Sol and B. Klurfan—p 1660  
Congenital Laryngeal Stridor Case J. R. Diaz Nielsen—p 1669  
Roentgen Measurement of Bronchodiaphragmatic Segment of Esophagus O. F. Noguera and M. H. Moreau—p 1676  
Hemorrhagic Pancreatitis in Child E. Sujo—p 1687  
Sesamoid Bones M. G. R. Malfatti—p 1693

**Physiologic Sterility in Women.**—Araya reviews the literature and discusses the scientific principles of the theory on the existence of a period of physiologic sterility in women and states that they are erroneous. Only 60 per cent of the women reported in the literature and seen by the author had the twenty-eight day menstrual cycle on which the calculations of the theory are based. The cycle frequently is irregular even in the same woman, ovulation may take place at any time during the cycle and the corpus luteum is found all through it. The results of the removal of a ripe corpus luteum at any time during this period prove that its presence and maturation do not play a distinct part in the onset of menstruation or (as Knaus stated) on the contractility of the uterus. The fluidification of the cervical mucus takes place at irregular intervals during the cycle, according to the observations of Devraigne, Seguy and Brandwein. The existence of a pre-gravidic condition of the uterine mucosa is not necessary to the nidation of the egg after its fertilization and the fact that women who had only one coitus during the cycle or in whom artificial fecundation took place became pregnant proves that pregnancy may take place at any time during the cycle. The life of the spermatozoa is long enough to enable them to wait for the production of ovulation in order to fertilize the egg. The length of life of the egg although unknown at present, may be calculated at about three days. The author concludes that there is not enough proof of the existence of a physiologic period of intermenstrual sterility in women.

## Beiträge zur Klinik der Tuberkulose, Berlin

87: 141 226 (Nov 22) 1935

- Immunization Against Tuberculosis by Inhalation of Killed Tubercle Bacilli V. von Westermarck—p 141  
Pulmonary Anthracosis Simulating Pulmonary Tumor Herta Gut —p 157  
Improved Dry Pneumothorax Apparatus Bela Duboczy—p 166  
Cerebral Tuberculosis and Its Position in Hematogenic Tuberculosis O. Gsell and E. Uehlinger—p 169  
Is Arneth's Method or Hemogram Method Better Suited for Practical Estimation of Tuberculosis? V. Schilling—p 211  
Spontaneous Pneumothorax and Its Treatment in Course of Pneumothorax Treatment and Casualties T. Vieregner—p 221

**Immunization by Inhalation of Killed Tubercle Bacilli**—Westermarck calls attention to his first report on immunization by inhalation of killed tubercle bacilli in the *Beiträge zur Klinik der Tuberkulose* (83: 515 [Oct 24] 1933) abstr. *THE JOURNAL*, Feb 3 1934 p 412 and also mentions other investigators who studied this problem. In this paper he describes his second and third series of experiments. In the second series he sought to determine what method of administration of the bacillary vaccine is most efficient: the spraying of dry bacillary powder alone or combined with a fluid spray or as was done in the first experiments the spraying of a bacillary suspension. He found that the latter gives better results than

the former methods. In the third series of experiments he used only the spray of bacillary suspension. It was the object of this series of experiments to determine the optimal dose, that is, the quantity of bacilli producing the best results. The author recommends for rabbits ten or twelve inhalations of a suspension of 1 mg. of killed tubercle bacilli in 1 cc. of a sodium chloride solution. He concludes that these experiments proved that by means of inhalation of killed tubercle bacilli it is possible to increase the resistance against inhalation tuberculosis in rabbits (and eventually in human subjects).

### Deutsche Zeitschrift für Chirurgie, Berlin

245 697 795 (Nov. 23) 1935 Partial Index

- Utilization of Sacral Hernia Developing After Kraske Operation for Purpose of Bringing Down the Sigmoid. E. Ebner—p. 707
- Pathology and Symptoms of Testicular Tumors. L. Findeisen—p. 717
- \*Frequency and Significance of Diagnostic Errors in Ulcer and Cancer of Stomach and Duodenum. H. von Haberer—p. 745
- Nervous Control of Thyroid and Adrenal. P. Sunder-Plassmann—p. 756
- \*Results and Hazards of Primary Excision and Suture of Soft Tissue Injuries. F. Schüle—p. 770

**Diagnostic Errors in Gastric Ulcer and Cancer**—Von Haberer states that differential diagnosis between a callous ulcer and carcinoma of the stomach and duodenum is not always possible. The percentage of errors of this type has not been reduced in his material in spite of considerable advances in the clinical and roentgenologic studies and of the experience gained at the operating table. In the 3125 gastric resections performed by the author 180 diagnostic errors of this type were committed. He feels that further reduction in the percentage of errors could be brought about by a reliable cancer test, which unfortunately does not exist at present. In his experience malignant degeneration of an originally benign gastric or duodenal lesion occurred with sufficient frequency to influence one's attitude toward the type of operative intervention. He reports a case in which a benign (ulcer) and a malignant lesion coexisted side by side in the same stomach and concludes that extensive resection in the presence of an ulcer is not only justified but imperative. It is to be regarded as a prophylaxis against carcinoma and, provided no vital contraindications exist, should always be preferred to the palliative operations for the exclusion of the ulcer.

**Primary Excision of Soft Tissue Injuries**—Schüle reports a study of 6,154 controlled cases of trauma of the soft tissues treated by primary excision and suture at the Second Emergency Station of Vienna from 1930 to 1934. Of these, 97.04 per cent healed by primary intention, 2.81 per cent by secondary intention and 0.15 per cent developed grave complications leading to death or amputation. A comparison with a group of 1,114 cases treated by the conservative method from 1922 to 1926 showed that the incidence of untoward results, such as death or amputation, was three times as great. The greater safety of the method of primary excision with suture depends on the avoidance of a secondary infection. Further improvement in this method implies more painstaking excision of the traumatized tissues and insistence on rest for the injured part. The method likewise recommends itself on cosmetic and economic grounds.

### Klinische Wochenschrift, Berlin

14: 1705 1736 (Nov. 30) 1935 Partial Index

- Pharmacologic Modification of Heart Action in Kymogram. K. Heckmann—p. 1709
- \*Changes in Hormone Content of Hypophysis with Alternation of Light and Darkness. A. Jores—p. 1713
- Studies on Influence of Narcotics on Vitamin C Content of Cerebrospinal Fluid and of Brain. F. Plant and M. Bulow—p. 1716
- What Isomer Coproporphyrin Is Eliminated in Decomposition of Blood? H. T. Schreus—p. 1717
- By What Endocrine Processes Is the Postpartum Onset of Lactation Elicited? E. J. Kraus—p. 1718

**Hormone Content of Hypophysis and Light and Darkness**—Jores says that observations on cold blooded animals indicate that the alternation of light and darkness produces changes in the hypophysis. Studies on frogs revealed that there is no change in color if the hypophysis or the eyes are removed. He points out that a connection has been discovered between the hypophysis and the eyes and he directs attention to experiments in which he observed that the melanophore content of the blood and of the eyes increases in rabbits after the animals have

been kept in the dark for an hour. He also observed considerable fluctuations in the hormone content of the hypophysis, which made it appear likely that this content has some connection with the capacity of the animals to find their bearings in the dark. Since other investigators observed that the hypophysis of frogs contains no melanophore hormone after the animals have been kept in the dark, a discrepancy seemed to exist. For this reason the author decided to investigate the problem once more. He found that the method of extraction of the melanophore hormone is important and observed that, if alkaline extraction is used, the hypophysis shows a greatly increased melanophore content, whereas extraction by means of Ringer's solution reveals a reduction. In further tests he found that the eye and the hypophysis undergo essentially the same changes in cold blooded and in warm blooded animals. When the animals are kept in the dark, the melanophore hormone is present in the hypophysis in an inactive, preliminary stage. If light stimuli reach the eyes, the inactive preliminary form is changed into the active hormone. However, the blood is likewise capable of activating the hormone. It was determined that the melanophore content of the human blood undergoes fluctuations in the course of the twenty-four hour period. The author further reports that he was able to corroborate Rodewald's observation, namely, that the hormone content of the hypophysis depends on the wavelength of the light to which the animal is exposed. In view of the considerable changes that light and darkness produce in one hypophyseal hormone, he considers it probable that some of the other hypophyseal hormones are likewise influenced. He was able to corroborate Rodewald's observation that the intermediated content is not influenced by the change of light and darkness. In this connection he points out that this is a new proof of the fact that intermediated and melanophore hormone are not identical. He studied the effect of light and darkness on the hormones that influence the blood pressure and the uterus and found that these principles are considerably increased under the influence of darkness. He thinks that this explains the higher incidence of births during the night.

### Monatsschrift für Kinderheilkunde, Berlin

64 180 (Nov. 12) 1935

- Investigations on Creatine and Creatinine Metabolism in Children with Healthy Muscles and in Those with Muscular Deficiencies. H. Kleinschmidt—p. 1
- \*Significance of Age of Parents and of Order of Birth of Children for Mental and Physical Deficiencies. Emilie Kleindienst—p. 24
- Reversible Broadening of Mediastinal Shadow in the New Born. S. Liebe—p. 48
- Congenital Visual Aphasia Following Birth Trauma. T. Brander—p. 55

**Age of Parents and Order of Births in Connection with Deficiencies of Offspring**—Investigations on forty-eight families that had a large number of children but were apparently free from hereditary defects revealed to Kleindienst that the fifth child is most often involved as regards physical defects. She points out that the mother is generally more than 30 years old at the birth of this child. In investigating the influences responsible for mental deficiencies, she observed that the first child is most often affected. In the forty-eight families, eleven of the first born were found to be mentally weak. Studies on a group of sixty-four weak-minded children revealed that almost half of them were first born children. This arouses the suspicion that the frequent impairment of the first born might be related to birth injuries. The author's observations indicate that here again the age of the mother (particularly if she is more than 30) has at least some significance. She points out that other investigators have gained the impression that a rather advanced age of the mother plays a part in the pathogenesis of mental debility of the offspring, nevertheless there are others who maintain that the age of the mother is of no importance for the development of mental or physical deficiencies in the offspring. To explain the high incidence of defects in the first born, it has been pointed out that hemorrhages in the cranium are especially frequent in the first born. In evaluating the practical significance of these studies, the author states that the defectiveness of the first-born child does not necessarily indicate that the family should have no further offspring. If a defective child is born the heredity should of course be carefully investigated.

but, if hereditary defects can be excluded, further offspring are not contraindicated unless the difference in the ages of the parents is extremely great or the mother is old or has been weakened by a rapid succession of births

### Munchener medizinische Wochenschrift, Munich

82 1941 1980 (Dec 6) 1935 Partial Index

- \*Experiences with Conservative Treatment of Injuries of Meniscus M Zimmermann—p 1945
- Value of Past History for Treatment of Pernicious Anemia and Its Evaluation in Members of Army A H Muller—p 1947
- What is Cause of Death in Appendicitis? H Doerfler—p 1949
- The Cancer Cachexia D Kulenkampff—p 1955
- \*Dietetic Treatment of Diabetic Patients Who Have Gastric Ulcer A E Lampe—p 1958

**Conservative Treatment of Injuries of Meniscus**—Zimmermann describes the procedure that is employed for the treatment of injuries of the meniscus at the orthopedic clinic in Munich. The conservative treatment consists of three phases: the preliminary treatment to counteract effusion and forced flexion, the application of an immobilizing bandage and the after-treatment. The preliminary treatment in case of injury of the median meniscus consists of splint bedding in slightly bowlegged position and in gaiter extension at the ankle (from 4 to 6 pounds). In addition, hot air treatments of thirty minutes' duration are given twice daily and for the night paraffin bandages are applied, which permit heating to 62°C without injuring the skin. After from four to eight days the flexed position is usually overcome, as is also the pain at the articular line. If there is still some effusion the heat application is combined with felt-knee cap compression applied two or three times daily for from three to six days. These measures are usually effective, so that puncture of the knee joint becomes only rarely necessary. However, complete removal of the effusion is highly important and after it has been accomplished, zinc paste (Unna) with a tricot covering and plaster-of-paris bandages are applied. In order to avoid pressure points small cushions are saturated with the zinc paste and are placed on the dorsum of the foot and over the ankle joint, the heel the popliteal space and the head of the fibula. Then two layers of zinc paste bandage are applied in order to avoid friction of the plaster-of-paris cast that is to be applied over it. At the level of the trochanter and above the ankle, strips of felt (5 cm in width) are placed tightly around the member so as to avoid slipping of the plaster cast. A correctly fitting felt cap with a window that leaves the patella free, is placed over the knee and then the plaster bandage is applied in such a manner that both strips of felt are half covered. After the cast has set, a window is cut over the head of the fibula and after thirty-six hours the patient can usually get up. The cast is left on for about four weeks, during which time the patient is generally able to follow his occupation. After the cast is removed active mobilization of the knee joint is done. The author says that this mode of treatment was employed in thirty-six cases. For the evaluation of the results, only thirty-one patients could be found and twenty-six of these were free from complaint and able to resume their former activities. In five patients the treatment was unsuccessful and two of these have already been subjected to arthrotomy.

**Dietetic Treatment of Diabetic Patients with Gastric Ulcer**—Lampe points out that treatment is difficult in the case of concurrence of diabetes and gastric ulcer because both conditions require dietetic treatment and because the diet required for one condition may eventually exert an unfavorable influence on the other. Since the effective dietetic treatment of a metabolic disorder makes the proper functioning of the gastrointestinal canal a necessary requirement the author advises that the dietetic treatment should be directed first against the gastric ulcer. To be sure the diabetes cannot be entirely disregarded and the excessive elimination of sugar and acidosis must be avoided by adequate insulin dosage. However hypoglycemic conditions have to be prevented because hypoglycemia greatly increases the secretion and motor activity of the stomach. Although insulin prevents excessive deviations of the sugar metabolism the author does not consider it advisable to give completely uncontrolled quantities of carbohydrates in the course of the ulcer diet. He combines the ulcer cure with rest in bed. In the case of considerable sugar elimination he

begins with a day of fasting, in the course of which weak, lukewarm tea is given at intervals of two hours. Beginning with the second day, increasing quantities of milk are given, at first diluted with tea. Later pure milk is given, which, in order to increase the caloric value, may be mixed with cream. In the case of acidosis, feedings with oatmeal gruel may be intercalated. If possible, the pure milk or the milk-cream diet should be adhered to during the first period of eight days. A milk diet has been known to be beneficial also in diabetic patients. During the second period cereals and eggs may be added and later buttered toast. Weak cocoa may also be given. During the following period the diet is gradually built up by the addition of small quantities of gruels, potatoes with butter, juices of fresh vegetables and strained vegetables. Eventually, small quantities of fruit juices may be added. Sugar should be restricted, but sugar substitutes may be given. Finally tender fish and meat may be added to the diet. At this stage the dietetic treatment must be adjusted to the diabetes. The quantities of butter and cream must be curtailed and the transition to the fat-deficient vegetable meat diet must be effected. It is advisable to employ also the other measures that have been found helpful in the treatment of gastric ulcer (local application of heat and injections of atropine and other substances). The proper regulation of the bowels is an important factor in the treatment of patients with ulcer. If surgery becomes necessary in diabetic patients with ulcer, the operation should be preceded by a fasting cure with subsequent oatmeal feedings and the necessary doses of insulin. It is essential that the patient be free from sugar and acetone at the time of the operation. Moreover, the oatmeal and insulin insure a sufficient glycogen supply in the liver, which is a highly important factor in the course of the operation.

### Zeitschrift f Hygiene und Infektionskr, Berlin

117: 403 560 (Nov 12) 1935 Partial Index

- \*Studies on Dissociation of Tubercle Bacilli B Besta—p 403
- Studies on Indole Positive Salmonella Strain M Kristensen and F Kauffmann—p 426
- Classification of Gartner Group F Kauffmann—p 431
- Immunity Studies on Chicken Cholera Fate of Chicken Cholera Virus in Immunized Animal Organism C Hallauer—p 451
- Pneumococci Immunity Following Gold Therapy W A Collier—p 470

**Studies on "Dissociation" of Tubercle Bacilli**—Besta points out that it has been known for a long time that in the artificial culture medium acid fast bacilli may split up in two types of colonies, the smooth and the rough. This problem of 'dissociation' (variation phenomenon) became once more acute by the assertion of Petroff that in human, bovine and avian tuberculosis the smooth form represents the virulent, the rough form the more harmless type. Petroff's statements were especially important because he concluded that the BCG cultures might eventually revert to the virulent smooth type. The author investigated this problem and found that tubercle bacillus cultures of the bovine and human types can readily be split into two variants, the smooth and the rough forms. However, attempts to split up cultures of avian tuberculosis were several times unsuccessful. It proved impossible to determine the factors that produce these variations for the variations were sporadic and could not be determined in advance. It proved impossible to detect radical biologic differences between the rough and the smooth variants. The rough and smooth variants of the virulent strains were always of equal virulence and the variants had the same low virulence in the weakened cultures.

### Zentralblatt für Gynäkologie, Leipzig

50: 2897 2944 (Dec 7) 1935 Partial Index

- Intra Abdominal Hemorrhages Following Normal Delivery H Kustner—p 2898
- \*Experiences with Chemical Pregnancy Reaction of Vacher and Lowman C Deff—p 2901
- Two Obstetric Manifestations of the Dyak in Dutch South Borneo V Vacher—p 2914
- Chronic Inflammatory Omental Tumor F Kovac—p 2916

**Intra-Abdominal Hemorrhages Following Normal Delivery**—Kustner gives the history of a woman who developed a severe intra abdominal hemorrhage following the use of Crede's method for the expulsion of the placenta. Laparotomy

revealed a defect in the fundus uteri, from which blood escaped into the abdominal cavity. Closer inspection disclosed traces of an older uterine fistula. The loose tissue covering this fistula had been torn in the course of Crede's expression, for unfortunately the placenta had been inserted at this site. The earlier history of the woman disclosed that in two previous deliveries she had undergone manual detachment of the placenta and that, following an abortion, a curettage had been done. The author points out that, because of the contraction of the musculature, injuries to the uterine wall, particularly those of the fundus, may result in dehiscence of the scar instead of secure closure. The resulting fistulas, however, are possible only if the injury involves all the layers of the uterine wall. If this is not the case, as for instance in enucleation of subserous or intramural myomas, the danger is not great.

**Chemical Pregnancy Reaction of Visscher and Bowman**—Dolff reviews the simple technic of the method of Visscher and Bowman (abstracted in THE JOURNAL, Feb 2, 1935, p 431), the results obtained with that method by Visscher and Bowman and also by Menken, and then his own results. He used only the simple technic, not the more complicated modification. He resorted to it in women whose pregnancy had advanced beyond the fourth month, in women who were in the earlier stages of pregnancy, and in cases of extra-uterine pregnancy. Moreover, he made some parallel tests with the Aschheim-Zondek method and examined the urines of healthy nonpregnant women and of nonpregnant women with adnexitis. In order to determine whether the hormone of the anterior lobe of the hypophysis is responsible for this reaction he also made tests with gonadotropic substance. Summarizing his results, he states that he obtained correct results in 96.08 per cent of advanced pregnancies, in 94.45 per cent of early pregnancies and in 81.82 per cent of extra-uterine pregnancies and abortions. In the pregnant women in whom the reaction was at first negative, the test was repeated and now gave positive results. In view of this fact, the author concludes that a negative outcome of the test makes a pregnancy highly improbable. He admits, however, that the reaction is likewise positive in concentrated urines with reducing decomposition products of metabolism and stresses that efforts must be made to eliminate this source of error. If these efforts succeed, the percentage of correct results would be higher, and there would be a more rapid and less expensive method for the diagnosis of pregnancy.

### Novyy Khirurgicheskiy Arkhiv, Dnepropetrovsk

33:1 192 (No 129) 1935 Partial Index

Surgical Study of Treatment of Cancer of the Lip S D Narbutovskiy —p 3

Comparative Leukocytosis in Differential Diagnosis of Acute Suppurative Surgical Conditions Ya I Lipakiy —p 15

Transplantation of Ureters After Method of S P Mirotvortsev S P Shilovtsev —p 60

Clinical Aspects of Cancer of Colon V I Mirer and M M Langer —p 76

Torsion of Kidney G B Tepitskiy —p 89

Mycotic Splenomegaly Ya M Pavlovskiy —p 100

**Cancer of Colon**—Mirer and Langer emphasize the importance of physical methods of examination in the diseases of the abdomen, particularly of palpation in various positions. Early resort to roentgenologic examination of the gastrointestinal tract and to exploratory operation are stressed. Colonic cancer may be operated on even in the advanced stage, because it grows slowly and is late in giving rise to distant metastases. Resection of the involved segment must be liberal, because of the fact that the colonic cancer extends not only locally but likewise along the length of the intestinal wall. The authors recommend that in cancer of the cecum the entire right colon and the right third of the transverse colon, and in cancer of the sigmoid the entire left colon and the left third of the transverse colon be resected. The subjective symptoms of colonic cancer may be grouped under the term 'colic-like discomfort.' Occult bleeding in the presence of colic-like discomfort constitutes a most suggestive sign of colonic cancer. In the neglected cases the cancer involves the peritoneum, spreads rapidly and gives rise to carcinomatous peritonitis. Clinical experience favors the one-stage operation extending its indications even in the presence of manifestations of acute ileus. The authors prefer the side to side anastomosis, three

rows of intestinal suture and covering the anastomosis with omentum or appendices epiploicae. The abdomen is closed tight and posterior incision is added when drainage is indicated. In one third of their cases the growth extended into the retro-peritoneal connective tissue. Their late results were quite encouraging. The presence of carcinomatosis of the peritoneum constitutes an absolute contraindication to the radical operation, while fixation of the growth constitutes a relative contraindication, resection being occasionally still possible in the latter

### Nederlandsch Tijdschrift voor Geneeskunde, Haarlem

79 5845 5912 (Dec 21) 1935

\*Rare Exanthem in Acute Polyarthrits D Van der Sande —p 5846

Seriesscopy B G Ziedses des Plantes —p 5852

Adductor Reflex G W Kastein —p 5857

Operation on Spinal Tumor Due to Amyotrophic Lateral Sclerosis B Stokvis —p 5860

Intestinal Myiasis J E A M Dierick —p 5866

**Rare Exanthem in Acute Polyarthrits**—Van der Sande gives the history of a boy, aged 5 years, who suffered during the last year from several attacks of acute rheumatic fever involving various joints and accompanied by hemorrhagic swelling of the eyelids and of the scrotum and hemorrhagic spots of different sizes on various parts of the body. He discusses the possible interpretations of this rare occurrence under three headings: (1) hemorrhagic diathesis, (2) erythema that turns hemorrhagic and (3) rheumatic polyarthrits with symptomatic hemorrhagic exanthem. He objects to an allergic classification of his case and concludes by stating that the main object of his report is to point out that hemorrhagic erythemas occur with or on account of acute polyarthrits, which, notwithstanding its grave aspect in the beginning, promptly responds to salicylate therapy.

### Hospitalstidende, Copenhagen

78 1205 1232 (Nov 26) 1935

\*Cystic Lungs H Kjaergaard —p 1205

Investigations on Evaporation of Alcohol from Urine V Eskelund —p 1229

**Cystic Lungs**—Kjaergaard says that cystic lungs are a structural anomaly seen mainly as (1) large solitary tracheo-bronchial pulmonary cysts with symptoms of compression and, on infection, of fever and purulent fetid sputum, and dermoid cysts with symptoms of compression, hemoptysis and coughing up of hair, (2) superficial air cysts with simple pneumothorax on rupture and (3) honeycomb lungs. In extensive honeycomb lungs in the new-born, cyanosis and attacks of dyspnea occur, in honeycomb lungs in children there are recurring bronchitis and bronchopneumonia, and in adults symptoms of intermittent infection of the cysts with coughing, expectoration fever, loss of weight and hemoptysis, leading to confusion with cavernous tuberculosis. The roentgenogram of honeycomb lungs is characterized by the peculiar system of large cavities separated only by thin walls without fibrous infiltration in the lung tissue, interpretation of the roentgenogram is difficult in the infectious stage. Treatment of infected honeycomb cysts is as a rule the usual medical treatment given in bronchitis and bronchopneumonia. The author emphasizes that, while congenital pulmonary cysts may give rise to these symptoms persons even with large and numerous cysts in both lungs may go through life without annoyance from them, and, except in the cases of extensive cysts in the new-born trouble appears only if the cysts become infected or rupture.

78:1233 1244 (Dec 3) 1935

\*Differential Diagnostic Significance of Fibrin Content of Blood Plasma in Diseases of Liver and Biliary Tract. T Geill —p 1233

**Fibrin Content of Blood Plasma in Hepatic Disease**—Geill made 284 determinations of the fibrin content of the blood plasma according to H C Gram in 150 patients mostly icteric with disturbances of the liver or biliary tract, and asserts that fibrin values not exceeding 0.5 per cent point to diffuse disorder of the parenchyma (hepatitis, atrophy or cirrhosis of the liver, or extensive cancer metastases to the liver) while values exceeding 0.5 per cent indicate disturbances of the biliary tract and jaundice due to stasis (cholelithiasis, cholestasis or cancer of the biliary tract and pancreas).

